ADDING A NEW DIMENSION TO EDUCATION

CORA L. WILLIAMS

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Adding a New Dimension to Education

By the Same Author

"Creative Involution"

"As If"

"Four Dimensional Reaches"

"Olympus"

Adding a New Dimension to Education

by

Cora L. Williams

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Publishers
SAN FRANCISCO, CALIFORNIA

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INTRODUCTION

THE early plant-life of the earth found its way of growth upon a horizontal plane; but when the tree came along it had to go up vertically for light and air, and so another dimension of sunshine and beauty was added to the world. Today the soul of youth, smothered by an overgrowth of materialism, seeks a new direction for its spiritual foliation. If that is at right angles to our established levels, let us remember the tree and rejoice that a new dimension of consciousness is at hand.

We make a mistake in thinking of space as room for physical movements only. The mind and soul require room for their functioning, quite the same as the body. Space is first of all the room, or category, of thought. It determines not only the form of the outer realm of perception, but also the form of the inner realm of reason. With the universe expanding in all directions and a world of relativity in the making, we do wrong in trying to hold our boys and girls to three-dimensional categories. The conquest of the air has released them from all

sense of limitation. They are the children of a new era, the Era of Non-Euclidean Geometry and the Einstein Theory. The conflict between the older and younger generations is more than a conflict of viewpoints; it is a conflict of space-forms.

The new conception of physics has entirely transformed the thinking of the scientific world and is rapidly bringing about a reconstruction of philosophical thought. Such great intellectual advance must needs be paralleled by a corresponding advance in education. This book is the report of an experiment in building up in children and young people the proper thought-forms for making the new ideas of space and time creative of a larger consciousness. The experiment has been conducted over a period of ten years with results that promise the solution of the youth problem and point the way to the formulation of a principle of human relativity.

It has been predicted that when, in this space-time world, a group seizes its spirit in its hands and says I AM, a new entity will spring into existence. The portrait of a school which we present here is the portrait of such an entity in the process of becoming—a group self taking form and life, and growing in consciousness and beauty through the creative

power of the principles underlying its being. It is painted in the varied hues of the many personalities who have given of time and self to making manifest this vision of education. If the reader will join with us in looking upon these three-dimensional glimpses as so many cross-sections of a higher reality, and will bind them together with the philosophy running through the whole, he will perceive, we venture to promise, a new thing in education and perhaps a new thing under the sun.

CORA L. WILLIAMS

Williams Institute
Berkeley, California
August 9, 1928

CONTENTS

		Page
	INTRODUCTION	vii
PART I	THE POINT OF VIEW	1
	Preliminary Sketches	3
	Getting the Perspective	9
	Blocking in the Portrait	15
PART II	CROSS-SECTIONS FROM THE ANGLES OF THE ARCHITECT, WRITER, DRAMATIC DIRECTOR, ARTIST, AVIATOR, PLAYWRIGHT, ESSAYIST, SCHOLAR, AND YOUNG INTELLECTUAL	23
	Leading Boys and Girls to Visualize the Life of the Past Through Its Architecture	25
	Directing the Unconscious Mind Through Story-Writing	29
	Releasing Individual Potentialities Through Dramatic Expression	40
	Discovering Artistic Power Through Creative Painting	44
	Viewing Education with the Aviator	47
	Making Plays and Players Together	53
	Living English with the Group	60
	Summarizing a Year's Work	66
	Introducing the Concept of Relativity into Teaching	74
	Marginal Sketches	82
PART III	CROSS-SECTIONS THROUGH THE SCHOOL	93
	The Happy Learning of Arithmetic	95
	Presenting the Panorama of Literature	102
	Growing the Scientific Attitude of Mind in the Youth	110
	Teaching the New Geometry	113
	A Report from the Language Department	118
	Giving Historical Perspective	123

CONTENTS

		Page
PART III	*(Continued)*	
	Extending Kindergarten Methods Upward	129
	Making Geography Dynamic	132
	Our Lower School	134
	Approaching Music Creatively	136
	Beginning Music with Solfege	140
	The Dance	144
	An Experiment in Thinking Together	153
	Our Commencement	156
	Marginal Sketches	162
PART IV	THE INFORMING SPIRIT	175
	A Typical Talk to Students	177
	Letters to Seniors	181
	Radioing to Mars	189
	What Pedagogy Has to Learn from the Mother	195
	Time-Binding	202
	Involution	208
	The Evolutionary Rhythm	211
	The Human Principle of Relativity	214
PART V	ANALYSIS OF THE PORTRAIT	219
	On the Making of Reports	221
	Marking the Group	228
	Educational Achievement at the Williams Institute	233
	When the Soul Goes to School	241
	The Worm Turns	247
	Genius in the Making	260
	POST-IMPRESSIONS	269

PART I

THE POINT OF VIEW

"It is Ourself, not ourselves, that makes for righteousness."

Preliminary Sketches

(Taken from early Bulletins of the School)

In this day, when theories of the state are being tried out, what of our education? Is that constructive toward the new social order which we vision? Our loyalty to the cause of humanity requires that we develop to the full the intellectual and spiritual energies inherent in our children. All knowledge of fact and skill in execution will profit naught if we fail to imbue our youth with a creative will, to train them in the ways of creative intelligence, to send them forth with a creative purpose toward the great whole of life.

The problem of government is one with the problem of education. Both have to do with the great life-process. That we are failing in either is because we are not keeping pace with that process. A new era is upon us, and this new era requires a new education.

It is a significant fact that man has never been able to realize his ideal in regard to education. Indeed, his failure to do so has been a subject of lamentation all down the centuries.

Here, then, as Plato would tell us, is a universal of which we must needs have intelligence if we would be able to proceed from the many particulars of sense presented by the education problem to the one conception of reason essential to its solution. In view of the age-long failure of education it is idle to heap opprobrium upon school and teacher. The trouble lies deeper.

When a field of mullein, whose leaves have been constant in form for years, begins to show variations of leaves, thicker and thinner, longer and shorter, the botanist knows that a new species is about to appear; that suddenly one of these variations from the normal form, longer leaves, perchance, will prevail to the disappearance of the others. So in the educational field today the many departures from the long-established ways of teaching herald a new child-culture.

But while the change in education is coming as the result of a biological process, we are not relieved of responsibility in the matter. Our will and purpose are vital elements in that process. Even as the elongation of the leaves existed potentially in the germ-plasm of the

mullein, so the determining characteristics of the educational practice of the future exist in our thought and ideals. As a people think, so will they project themselves forth to the coming generation.

That our present education is competitive—a means for self-aggrandizement—is because the thought of our Western World has found its motivating principle for the last fifty years in the doctrine of natural selection and the survival of the fittest. But "the old order changeth, yielding place to new." We are rounding the life-spiral. The centrifugal forces which have carried us far asunder are giving place to centripetal forces drawing us to a perception of our human oneness. Where we were wont to put the emphasis upon the differentiative aspects of the life-process, the integrative are now claiming our attention. Mutual aid and co-operation are fast replacing competition and struggle in the scheme of things.

Since education is a matter of the right functioning of the individual toward the great whole of life, it must change with the changing social

order. We hold to the educational ideals of the past, and then wonder that our children are not prepared to cope with life as it is.

"The more we organize our schools and seek to perfect them, the more dead they become," was the despairing remark recently of an eminent educator. "What is the matter?" he asked. The answer is to be found in the question itself. To be alive a thing must be organic; that is, it must follow the law of natural growth. Organized structures are of their very nature dead structures. The trouble with our schools is that we seek to dictate their form instead of letting that come as the free expression of a growing, expanding life.

Would we educate for world unity, we have first to find a scientific basis for viewing humanity as an organic whole. Religious and ethical sanction for such a belief are not enough. We require the biological knowledge that we are "members one of another."

Secondly, we must eradicate from our minds and from men's minds the world over the false

idea that competition is essential to human progress and achievement.

And, coming to the school, we must begin the integrative process with the child, which means that we have to change our whole educational approach, to do away with an education that fosters individualism and self-aggrandizement.

The first desideratum for an organic education is that it shall be true to the movement of life. All its interests and activities go to show that the evolution of human society today is in the direction of higher and higher integration. Man is finding his life as never before through the group. But while the life-impulse is manifestly integrative, standardized education takes little account of that fact. It is still holding to the ideal of the fittest, with the result that the individual does not know how to become a creative component of the life about him.

If there is one thing today upon which the whole of mankind is united, it is the need for a new education. In every land and among every people, in China and India as in Europe and

America, new schools are springing up. The educational unrest is world-wide.

It is as though the human spirit all at once felt within itself new powers, and would be released from old bonds. But with manifold theories clamoring for attention, it is imperative that we know what are the big, underlying needs to be met, the desired ends to be attained; otherwise this tower that we are building for future generations is in danger of toppling, through a confusion of purposes. It is a matter of vital concern that we find some unifying principle for the projecting forth of our efforts. Let us but learn to speak with one accord, then nothing good will be withheld from us that we aspire to do, then verily our tower shall reach unto heaven.

Getting the Perspective

Any plan of education, to be coherent and consistent within itself, must be founded on a philosophy; and if the plan is to carry far, that philosophy must needs be in accord with the general movement of life and thought. Recognizing this fact, we started our experimental work on a philosophy which we call Creative Involution*, having for its logical basis the following postulates or assumptions:

1. There are different levels (dimensions) of being (existence) in the universe (nature).

2. These levels of being constitute a continuous, hierarchal order of consciousness.

3. Operating through this hierarchal order is a creative principle which acts both as an urge and a pull to advance consciousness to higher levels (dimensions).

4. The advance to higher levels is accomplished through the integration, or synthesis, of elements on any given level to form a new unit or whole.

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*_Creative Involution_, Cora L. Williams.

5. The new unit is possessed of properties and relations not to be explained in terms of what has gone before.

6. By virtue of its presence, the higher level of consciousness recreates the lower.

7. The chief function of education is to lift consciousness to higher levels.

We are finding this postulate system productive of a constantly increasing body of truths, or theorems, having vital bearing upon education and upon human experience; and we believe that it offers a method for solving the problems, both of school and life, which is in accord with the most advanced scientific and philosophic thought.

Having found a logical basis for our educational experiment, our next problem was to give our theory of "levels" a pedagogical appeal. The symbolic approach seemed to offer the best solution, so we started our teaching by taking the spiral as our symbol, and a happy choice it has proved!

The smallest child is eager to learn how "striving to be man the worm mounts through all the spires of form." To the youth the spiral

becomes a figurative representation of the entire evolutionary process—"the eternal circle which life pursues." He visualizes himself as standing somewhere on its scale of being. Soon he begins to wonder about the next level—how that is to be reached, "For surely," he says, "the process does not end with man." Then comes our opportunity to show him the necessity of establishing well-arranged hierarchies in his own tendencies. (Cf. p. 184).

At this point in our teaching, the psychological value of our symbol becomes apparent. The spiral binds together the unseen elements of thought and yearning which are in every human heart. It points to a perfection realizable only in a higher dimension of consciousness. By its upward sweep it lifts the individual out of himself to new vision and purpose. And finally, through its mathematical continuity it brings him to feel his spiritual oneness with the universal whole.

But more is required than logic and vision to make an educational system effective. There must be a definite plan of action. This was not easy to find, since we were charting unknown

seas, but the following outline of the integrative process has served to map our course:

The individual emerges from the life-stream a self-functioning and self-reproducing organism. In the course of his life-span he has three zones or levels of integration to accomplish. Each of these must build into the next; to stop short with any level is an arrest of development. As each level becomes established, it recreates the lower.

The First Zone:

The physical level—the body.

(a) Elements to be integrated: organs, glands and other structures.

(b) Methods of integration: establishing health habits; regulating time and action; training for physical endurance and bodily development.

(c) Desired results: physical perfection; self-control.

On this level there are three types of integration to be watched: growth integration, chemico-functional integration, neural integration. Consciousness is a matter of sensations. The creative urge is sexual.

The Second Zone:

The mental level—the mind.

(a) Elements to be integrated: desires, impulses, various mental faculties.

(b) Methods of integration: training in accurate observation; training in logical thinking; training in clear expression.

(c) Desired results: self-direction; self-determination.

Integration on this plane is chiefly psychic. This is closely connected with neural integration, but approached from the side of the totality of activities rather than from the side of nerve-organ activity.* Consciousness should rise to an awareness of experience. The creative urge takes the form of will-to-power.

The Third Zone:

The spiritual level—the soul.

(a) Elements to be integrated: the self and its world of persons.

(b) Methods of integration: learning to feel together (appreciation of the arts); learning to act together (right industrial relations); learning to think together (the creating of new power and insight).

(c) Desired results: self-realization for the individual; unity for mankind.

Consciousness on this plane should result in a perception of the oneness of all life. The creative urge aspires to the ultimate and finds its manifestation through the art impulse. The true, the good and the beautiful are its goals. The individual re-enters the life-stream a con-

*_The Unity of The Organism,_ Wm. E. Ritter.

sciously creative component of its super-organic life.

The above process of integration is beautifully summarized by Browning in the following passage from his *Death In The Desert:*

. . . Witness in each man,
Three souls which make up one soul: first—to wit,
A soul of each and all the bodily parts,
Seated therein, which works, and is what Does,
And has the use of earth, and ends the man
Downward: But, tending upward for advice
Grows into, and again is grown into
By the next soul, which, seated in the brain,
Useth the first with its collected use,
And feeleth, thinketh, willeth—is what Knows:
Which, duly tending upward in its turn,
Grows into, and again is grown into
By the last soul, that uses both the first,
Subsisting whether they assist or no,
And, constituting man's self, is what Is—
And leans upon the former, makes it play,
As that played off the first: and, tending up,
Holds, is upheld by, God, and ends the man
Upward in that dread point of intercourse,
Nor needs a place, for it returns to Him.
What Does, what Knows, what Is; three souls, one man.

Blocking in the Portrait

(Presented at the New Ideals Education Conference held at Oxford, England, April, 1925.)

If you really wish to know a man, Mr. Chesterton has said, the most practical question to ask is, What does he think of the universe? This opinion of Mr. Chesterton's is confirmed by our American mathematician and philosopher, Professor Keyser, who says that nothing else is quite so practical in the sense of being effectual and influential, as the views men hold regarding the all-embracing world. If this is true, then certainly the most revealing question that one can ask concerning a new school is, What is it teaching the child about the cosmic order and his place in it? I shall begin by answering that question.

We teach our pupils that the universe, instead of being a fixed, completed thing, is still in the process of becoming. We show them how, from myth to myth, from world-theory to world-theory it has evolved with the evolving

mind of man, and that the end is not yet. We seek to imbue them with the desire to take their place in this vast upward movement of life, to become creative components in its ever-ascending hierarchy of being.

You will readily perceive that for a school to live up to this concept of the universe requires much thinking and talking together of teachers and pupils, much correlating of daily happenings with larger meanings. It is a mistake to suppose that children cannot understand. Their minds are open to great truths. They want to think with us. When they chance upon knowledge in the making, they are all eagerness to be in the game.

The trouble with education today, indeed the trouble with education all down the ages, is that it has not kept pace with the evolution of life and thought. The trouble looms larger today because evolution is more rapid than ever before. In fact, so fast has life moved of late that we have passed into a new biological epoch without realizing it. Education in general is wrong because it belongs to the biological epoch that we have left behind us.

All our human interests and activities unite to show that the group is replacing the individual as a unit in the evolutionary process.

Whereas formerly we contacted one another as individuals, we now contact one another through the group. One works for a concern, a corporation; one acts through committees; one finds one's social life in the club—everywhere the law of psychic gravitation drawing us together. These larger contacts require larger powers, deeper insights than were needed for individual functioning—a fact to which we have not awakened. We are trying to make a one-mind power to do the work of a multiple-mind power. Or what is even more dangerous, we are integrating blindly and are usually lowered by the process, as witness the crowd mind, than which our civilization has no greater menace. It is quite time that we discovered the laws of association.

Since we human beings are differentiated through our thinking, we must become integrated through our thinking. In fine, to keep up with the progress of life we must learn to think together. To discover that art and how to teach it to children is the purpose of our pioneer school of creative education, which we call an Institute, for it is more than a school; it is a demonstration center for educational experiments that promise to throw light on group-functioning and the development of the individual through it. I do not need to tell you that

we mean by creative education the creating of personality and the more abundant life that this brings.

To define clearly our relationship to standardized education, I would say that the effort of the Williams Institute is directed against the massing of children in school. A long experience in teaching, an experience ranging from primary school to university, gradually led me to see that large classes induce the collective mind and lower the mentality of the individual; also, that they form in him the habit of letting the crowd think for him—a habit which often follows him through life. The Institute endeavors to show that, by means of the small class and the inducing of the group mind (as distinguished from the crowd mind) the individual can be lifted to a higher level of mental and spiritual insight and power than he could otherwise attain.

The Institute functions through four closely correlated departments: (1) a school for children; (2) a council hall for parents; (3) a demonstration laboratory for teachers; (4) a meeting place for all who would build toward the Great Community.

As a school it is co-educational and is organized from the kindergarten through the high

school. Its curriculum parallels that of our national school system and prepares for college.*

As a council hall for parents, the Institute holds frequent meetings and seminar courses, with the aim of making the family, rather than the child, the unit of the educational system. This has the effect of keeping parents in close touch with the developing minds of their children and of welding the family together with common interests.

As a demonstration laboratory, the Institute offers the teacher freedom for original work. Nor is this opportunity limited to members of its staff. Men and women who have a deep concern for the future of the race find here an opportunity to put into practice ideas which may be of value to education.

As a meeting-place for community workers, the Institute is always open, and many conferences of a more or less public nature have been held. This has proved to be a most effective method of spreading our educational philosophy and of helping to create an intelligent demand for a better education.

So much for our organization. As to our methods of instruction: First, we eliminated

*Since this address was given, a Junior College and a Teachers' Course have been added.

competitive marking, since that belongs to the biological epoch out of which man is passing, the epoch of the survival of the fittest; in its place we have co-operative charts which bind the pupils of a class together with group purpose. Always our test of success is the ability to co-operate with others, not to compete with others. In answer to those who question if there is not lacking the incentive to study: with rare exception our strongest students are to be found in our best integrated groups, thus verifying the biological law that the vital intensity of the units composing the association, in this case the minds of the pupils, is in direct proportion to the degree of their interdependence, or solidarity, as a learning group.

In place of the recitation and the old-time hearing of lessons, our classes meet in round-table seminars limited to twelve pupils. Below the high school we require no home work—all studying is done under the direction of the teacher. In the high school, assignments for reading and study are made, and each pupil comes prepared to contribute all he can to the discussion of the hour. In this oral dialectic we strive to observe the recognized rules of thought, but, as Mr. Graham Wallas has suggested, we find still more important, from the

psychological point of view, "a code of manners which allows feeling to play without shame around the whole process of thinking." Our young people realize that if they are going to be able to cope successfully with the group-world in which later they are to find their activities, they must learn to think together; to combine their thought to the creating of something new, something bigger than any of them could achieve alone.

Perhaps I should say here that it is not our contention that group thinking should displace direct observation and solitary thought, but we do maintain that these do not reach their full accomplishment until they are thus socialized. Nor does group-thinking mean that we have all to think alike; the greater the differentiation in our thought, the higher the resulting integration. Hence it is very important that each individual makes a contribution that is uniquely his own. Many will question if continuous participation in group thinking does not incapacitate the individual for independent thinking. It is our experience that group-thinking develops the power of independent thinking, again confirming the law that integration, whatever its basis, makes possible greater variation than could exist without it. The co-operative action

of the group not only allows, but depends upon individual initiative.

. . . . . .

And now, in final word, I want to say that the justification of our entire experiment is the release coming to the mind and soul of the child through group thinking. The combining of many points of view gives a perception of a deeper reality. With this comes a unity of comprehension which makes learning easier. Because the consciousness engendered through the group is not bound to the individual organism, it is free to create. And more, through its impersonal emotion finer faculties are liberated, and with these comes that synthetic intuition by means of which the soul moves towards its freedom in God.

PART II

CROSS-SECTIONS FROM THE ANGLES OF

THE ARCHITECT

THE WRITER

THE DRAMATIC DIRECTOR

THE ARTIST

THE AVIATOR

THE PLAYWRIGHT

THE ESSAYIST

THE SCHOLAR

THE YOUNG INTELLECTUAL

"In words so deep that a child would understand."

Leading Boys and Girls to Visualize the Life of the Past Through Its Architecture

An oak-beamed room with tapestried walls, boys and girls of ages ranging from twelve to sixteen years, sitting and standing informally about, listening in rapt attention to an elderly man of benign countenance who draws from time to time with colored chalk upon the large sheet of drafting paper spread on the table before him. A medieval scene in some old castle? No, a weekly schoolroom picture in the first years of the Institute. The man is an internationally known architect; with him a group of very modern young people, reconstructing the beauty of Karnak, or living over again the life of old Rome.

Enter, and at once you are carried back twenty or mayhap fifty centuries, for this Architect has "the marvelous power of overleaping time and space" and translating his hearers to any age he chooses. And just now he is using that power to teach history. But be-

fore you can understand how he does this you must know how he builds, and fortunately that has been told by one of his neighbors.

"He built us a clubhouse in our home town of Berkeley. 'Now,' he said, 'this is an organization of neighbors who like one another and wish to have a sort of common home for the hours of their meeting together. It must *feel* that way.' It does. With naked timbers stayed, braced and tied together in the handsomest and most powerful structural forms, it is as intimate and stable and homey as an old stump. That club holds its membership—draws the old members back again and again; will not let them stray—for it is a sure shelter o' stormy nights and a great simple hollow of coolness other times. Its open timbering is Californian. He built it for Californians."

Similarly, when he was called upon to build a new church, instead of consulting books on architecture he asked about his clients' beliefs, and was given testimony of such strong and measureless confidence in their creed that his problem, as it then seemed to him, was to design a church that would fit and satisfy the joyous, holy feelings of an early Christian. The result is an edifice that makes the heart sing. Now reverse this process; proceed from the struc-

ture to the necessity which called it into existence, or the emotion which created it, and you have the Architect's method of leading his young people to rebuild for themselves the life back of the architecture which they are studying.

Class over, talking with the Architect, you come to a clearer insight into the psychology underlying his teaching. "There are," he says, "mental processes not to be expressed in language. Music and architecture are vehicles of expression for phases of our human experience; also from the paintings of any historic period one gets a reflection of that period.

"It is not the object nor the likeness to the object that the artist works for, but a portrayal of the life that is behind the visible—he strives to find the spiritual meaning of things. The terms 'romantic,' 'classic,' etc., reflect a mental condition. It is that mental condition that I seek to have my pupils discover," said this very unusual teacher.

How different from the way you and I studied history. If we were so fortunate as to sense the great life-stream at all, it was as observers standing on the bank. But these young people are taught to feel themselves a part of it. Knowing ancient civilizations, they know their own

in contrast and in conformity with those, and so come to a clearer perception of the human group as a whole and what they may contribute to it.

Directing the Unconscious Mind Through Story-Writing

"O, this is story-writing day!" was the happy cry of the children on Tuesday and Thursday mornings in the years during which a distinguished Writer was demonstrating his philosophy of child-culture at the Institute. The children's joy in story-writing bore eloquent testimony to his success in leading the hidden forces of the child-mind into creative channels. But let us give in the Writer's own words the philosophy that underlay his work:

"The human being contains all that has produced him in the long evolutionary process through which he has been constantly urged upward during the ages. Under the ordinary drift of life very few of these inheritances are ever discovered by their possessor, for they lie beneath consciousness. In an emergency some of them may come forth, as when a mother develops extraordinary courage and resourcefulness on seeing her child threatened, or love between the sexes works similar miracles of self-discov-

ery. In children these valuable subconscious powers lie near the surface, not having been overlaid with life-experiences, and readily respond to proper stimuli. To help children find, develop and organize their deep forces and thus lay foundations for a competent after-life is the aim of my work.

"We are as much a product of what we do as what we do is a product of us. When the will has determined any definite work, the powers readiest to serve it align themselves at once for that service. But a human being is all but infinitely complex in variety of inherent powers. Many of these may demand exercise in ways other than that selected by the will; but the highest and best of these powers appear to be flexible and adaptable, so that when they discover persistence in a certain line of work, they swing one by one into the chosen current of activity, thus presenting the spectacle of continuous development and progressively increasing power in the chosen direction. Such a course transforms a weak versatility into a powerful definiteness.

"The prime aim in my guidance of children is to help them find for themselves, and develop and organize into a natural synthesis, their best individual powers by setting them pleasant

tasks of a social nature. Writing is the means I employ to aid children to self-discovery and self-development. The method is a complete departure from the usual school work in composition, in being efferent instead of afferent—it draws out instead of puts in, or using what has been put in, and in the drawing out it reaches for the deeper inherited powers instead of the meager and unco-ordinated experiences and immature thought-processes of the child.

"Imagination is inherited experience. Vivid in children, it becomes more and more deeply overlaid by life-experiences as the years increase. It is through a right exercise of the imagination that most of what is valuable in us may be found, developed and made useful. It is as crippling to repress the imaginative fecundity of children as it would be to check their physical play. The true task is to direct the exercise of the child's imaginative powers in such a way as to make them constructive and developing, instead of incoherent and idle. Such training of the imagination is essential to the highest reasoning, including the forming of far-seeing hypotheses through which the greatest scientific and philosophic advances are made.

"The subconscious, and also the imagination, because it is the dominant element of the sub-

conscious, is untrustworthy if not held under direction. In heavy stresses it may be turbulent, unreasonable and destructive if untrained. Something is needed to steady it, and to select, develop and organize its better forces.

"Invention supplies that need. This is a faculty of the conscious mind, and is our organizing, planning force. Compared with the imagination, it is a recent development in the evolution of mind. We may conceive it as a ruler which the imagination has created and set up for its proper government. But invention considers expediency, not morals. It must be influenced by the imagination as much as it influences the imagination. The two must constitute a partnership. If permitted tyranny, invention will serve the imagination as the stork served the frogs after they had appointed him their ruler. The naked product of mere invention is the material life, hard, selfish, unfructifying. It lacks the vital principle—the vision, the ultimate understanding—which resides in the imagination.

"Since the child is undeveloped and unorganized, his imagination is strong because it is old to the species; his invention is weak because it is new, and therein lies the difficulty in giving

the child a conscious control of his unconscious forces.

"Fiction, in its highest modern form, almost entirely concerns itself with the presentation and solution of the vital—not the external—problems arising in individual and social life. In this process it shows the reactions of conflicting impulses, internal and external to the individuals. The author exhibits his focal character struggling through moral or mental darkness to light, out of weakness into strength, from defeat to victory, or toward a vital goal, and in that process discovering within himself, under the stress of his struggle, hitherto concealed powers by the use of which he solves his problems or wins his prize.

"Besides presenting and solving all conceivable essential problems, fiction goes farther and sounds the mysteries of the hidden and secret life of the individual; it searches out the cryptic springs of impulse and motive, and shows in exhaustive analysis the reactions between the individual and his world. Largely through good fiction, human nature is coming into a better understanding of itself. That is the beginning of wisdom, power and usefulness.

"Where does the fiction writer find his ability to reveal the hidden life? Whence does he get

the understanding to know what vital problems are, and how does he discover ways to solve them?

"Certainly he must use the insight which heredity has made potential in us all. From his exhaustless inherited experiences he draws his knowledge, since all vital problems are as old as mankind and have all been suffered and solved; and his ability to reach so deeply within himself has been acquired by long and determined concentration inward. From the innumerable persons of his inheritance he brings forth characters whom he knows with an immeasurably greater intimacy than he can know anyone in actual life, for no person can really ever know another. With his invention he arrays this precious understanding in a cogent series of events from which the accidental and other obscuring facts of actual life are excluded as being false to the truth and logic of life.

"Hence fiction-writing is used as the basis of the guidance I give the children. Instead of being permitted to use their exuberant, unorganized imaginative powers in purely fanciful and meaningless stories, as they are inclined to do, they are given definite problems in the lives of imaginary children, and are left to solve them in their own individual way. Of course, this is

not done to make fiction-writers of them, but to produce a normal, rounded development for any life that they may choose later; to make them more efficient in their regular school work; and —most important of all—to wake in them a love of creative and constructive work and to plant a habit of continuous growth.

"The problems set them for solution are vital and ethical, never trivial nor pointless. Problems wholesomely stimulating to the productive powers are preferred, because of the call which these problems make upon the imaginative and inventive powers.

"A period of an hour and a half is given the children in which to hear the problem and to write a complete story embodying its solution, all in the proper form of the modern short story. This time-limit compels the children to make an immediate draft on their resources. The entire work is done within the period, no home work being given. Rarely do they fail—and some of them never fail—to have the story completed within the time; and what failures there are arise from lack of time for working out the larger scheme of their vision. Their imagination and insight are required to bring the characters into life, and follow them, rather than lead them, through a line of conduct

springing naturally from impulse quickened by the stress of the crisis in which they are plunged. Invention also is demanded, as the problems are so designed as to call for ingenuity and prompt determinative action on the part of the characters. The ethical principles involved require the children to find and use their inherited understanding of right human relations, such as the attitude of children to their parents, and to all having a claim on their sympathy or help; and to develop self-respect, courage, magnanimity, honesty, cheerfulness, resourcefulness, determination, and many other valuable traits."

The following is an example of the problems given by the Writer to his classes:

"We are going to have a story today about false heroics. I suppose that every one of you has wished, perhaps more than once, to do something spectacular and heroic, something brave and splendid. It is a very admirable trait. The child who doesn't have dreams of doing something great will never amount to anything in life. When I was a boy I had them. I can recall them specifically now. I understand that girls have similar dreams.

"This love of heroism is a beautiful thing in young people. The thing is to know how to han-

dle it wisely. A great deal of the crime committed by men and boys comes simply from that desire for the heroic. There are more mistakes made in trying to be heroic than in any other one way.

"Our story concerns a boy (girl) who wished to be heroic, to have his (her) name in the newspaper. This boy (girl) was very tired of his (her) humdrum life. Everything was dull at home and at school; nothing exciting ever happened. He (she) longed for something thrilling. One day our hero started out deliberately to seek adventure. Tell what he (she) found and of the serious consequences resulting."

To show how this problem was taken up by the different pupils, we give the opening paragraphs of some of the stories written by the pupils of the sixth to the ninth grades:

"Let's get up an adventure, George!" cried Frank excitedly as the two boys sat idly in the parlor of the Joneses' home.
"No, no," said George. "Mother would not like it."
"Oh, but I have such a fine idea!" declared Frank.
"Well, let it go. Think about something else."
"Now listen to this plan," said Frank eagerly.

KENNETH S.

Joe Lukes put his pencil down in despair. He could not go on with the test that was given him. He glanced over at his rival, who was making his pencil write as fast as it could go. The object of this test was to see who would be president

of the school. It meant many credits to the winner, and this is what Joe was working for.

"By Jingo, I'll make that fellow lose, or——!" remarked Joe.

ROBERT B.

"Here's my chance," thought John as his eyes fell upon a canoe with several small, frolicsome children in it.

He did not stop to consider the possibility of his scheme failing. Of course things would go just as he wished. And then the thrilling sensation of seeing his name and picture in the newspaper, and possibly a reward. LILLIAN C.

It was midwinter in Montreal. The St. Lawrence river had risen six or seven feet, and was still rising rapidly.

James Thomson, a boy of eleven, who lived in Quebec, had read of the famous deeds done and seen pictures in the newspapers. Rumors were heard that Montreal was in great danger of inundation; the town gossip was full of men who had risked their lives in building dams to check the flood. James was stirred by these tales of daring and bravery. He wanted his name in the newspaper. He was going to Montreal.

GEORGE A.

"Help! help! my horse is running away!" screamed a girl mounted on a beautiful black steed.

Bob Clark was seventeen. He had always dreamed of great heroic deeds, and had always wanted to be a hero. The time had come. Bob heard the girl's cry. He quickly ran toward a large oak tree whose branches reached the highway. He was a good climber and was soon on the lowest outreaching branch. EVA L.

The road was dusty, and Jim was tired. He was tired of the quiet life at home.

It was about night when he reached the city of Chicago.

He wanted to do something very wonderful. Suddenly he saw a policeman pushing a boy who was struggling.

MOLLY W.

"Oh, Mary, Mary!" called Louis, climbing over the fence that separated their homes, "come here. I want to tell you something."

Mary came running out. "What is it, Louis? Tell me quick! 'Cause I want to get Ethelinda to sleep."

Louis held up a warning finger. "Hush!" he admonished gravely. "Get Ethelinda an' come quick!"

Mary obediently fetched her doll and trotted after him.

"What is it, Louis?" she asked; "an' where are we going?"

"We're going to the woods," explained Louis, mysteriously, "an' when we get there I'll tell you." EILEEN W.

"Oh, what a world!" said I to myself. I was bored. I longed for excitement. I had stopped at the corner to wait for my car. At that instant a firebell was heard close at hand and cries of help from a building across the street. I looked up at the building. Flames were leaping out of the fourth-floor windows.

Here was my chance! HENRY DE C.

While the Writer's outstanding achievement as a teacher lay in his directing of the child's unconscious mind, his method secured in addition results that are aimed at, but rarely attained, by prevalent methods of instruction.

Releasing Individual Potentialities Through Dramatic Expression

"We are free," says Bergson, "when our acts emanate from our own personality." Those who were privileged to see the beautiful rendition of *A Midsummer Night's Dream,* given by our pupils at the close of their year's work in dramatics, agree with him. The spirit in which it was done was most unusual. The acting seemed so unlabored, so innocent of direction. It was as though the whole thing took place before our eyes spontaneously——just happened.

Our Director ascribed this success to the fact that she had the children before they had evolved a self-consciousness which shuts them away from the universal, impersonal way of thinking and feeling, and that she worked with them in small groups. In these plays every child in the school was given a part, and the number often impinged on the hundred mark. Under ordinary circumstances the management of such a diversified company of players would have been well-nigh impossible. But it must be

remembered that the co-operative mind which we seek to induce is not an arithmetical collection, but an involution, a higher power. The group feels not the weight of numbers, but, rather, the lift of the co-operative mind. Its potentiality is many times greater than the sum of its members. We are dealing, therefore, not only with the subconscious, but also with the superconscious.

It is this road which must be traveled, beginning with the lowest functioning of the former and reaching to the highest inspiration of the latter, if the individual is to be lifted to a higher power. The reasoning of the group is necessarily of low order to begin with because of the lack of power in the individuals for abstract thinking, but, given the right impulse, it transcends all of our old methods of reasoning, and by intuition leaps with the swiftness of lightning to fullness of self-expression. The separate senses merge into one, and so react through the organism as a whole. The dramatic most essentially consists in the sudden opening up of vistas of the human capacity for feeling.

To get a ground for this understanding, and this sudden revelation of the supercharged imagination, our Director started with color. She said, "The children learn to hear color, feel it,

sing it and act it. They easily discern the qualities underlying each color. The pupils make charts of qualities of color, and from them construct short episodes, dramas, free verse, pantomimes, etc. They accept nothing that is not convincingly sincere, for in the color underlying the effort they have the key to unification. Psychology has different methods of explaining what it calls 'colored hearing.'

"It matters not whether it is physics, or an old associative process, or a matter of symbolism. This experiment shows that the ability to merge the senses into one, to get a universal reaction, and to translate its messages into dramatic expression, exists not only in the mind of the genius or eccentric, but in the child's mind also when functioning on the group-plane. The process involves concentration, spontaneity and sincerity. It holds the pupil's interest so intensely that all self-consciousness and artifices are thrown aside. It brings him also to a realization that true expression for him is an individual thing that must proceed from his own consciousness."

By clearing the subconscious mind of impediments and limitations, so that the body and voice were free to be recreated by the thought, our Director enabled her groups to depict spon-

taneously a given emotion, to make a perfect picture without dictated form. These group pictures were always movingly convincing, and devoid of pose. She also stimulated literary appreciation by establishing the creative impulse in the pupils' minds towards the things which literature reveals. Shelley's *Cloud,* Byron's *Ocean,* Tennyson's *Brook* became revelations of beauty to them. They were able to express through the voice and body the qualities which underlie these aspects of nature, the color and rhythm and composition.

Discovering Artistic Power Through Creative Painting

"Behold, when the spirit is released, genius works!" was the exclamation of Nicolas Roerich, the great Russian artist, on viewing for the first time the paintings of our pupils.

"To what," you ask, "was this release due: the method of instruction, the nature of the medium, the love of the children for color, the personality of the teacher?" These all played their part, but those of us who watched the children paint, year in and out, are certain that there were deeper forces at work—so unbelievable were the results.

Instead of beginning by teaching the pupils historical forms and technique, our Artist-teacher introduced them at once to the creative painting of the modernist school. "Children," she said, "live in the present, not in the past. Hence they must take up art where they find it, just as they must take up life where they find it. Though we may not understand this modern art ourselves, they will understand it, and, understanding it, will direct it into higher channels of creative expression. Not only does the

child need creative art for his development, but creative art needs the child for its development." That the practice proved the theory was confirmed by the Director of the California School of Fine Arts, who said that, through the creative method, our young pupils had achieved a resilience of atmosphere and organization of color for which many artists had to work years. He found the children's paintings so unusual that he asked for an exhibition of them at the School of Fine Arts. Not only our studio, but the entire school building and the homes of the children became infused with the spirit of art. Visitors came from far and near to see the children work.

Although these pupils entered the great creative process of art at the point where their minds touched it, they were taught to know the sources of its inspiration and the currents which have given it momentum down the ages. They were made to feel their unity with all artists. It was the instructor's wont while teaching to carry on a sort of art-history recitative which constituted a psychic matrix for their individual creative efforts. The little fellow sketching in his Golden Gate worked alongside the youthful Giotto. They all knew the different schools and just what emancipation of the spirit

each of those marked—the first artist who dared to use color—those others who had the courage to break away from the classic school. What a thrill was that to leave Paris and the critics behind and go with Rousseau and Jean Francois Millet into the Barbizon Forest! As you passed among them working at their easels, one would tell you that he was painting in the impressionistic school, another in the tonalist. But, looking over the paintings after the children had departed for other classrooms, you knew that one and all painted in the school of joyous, vibrant youth, and for the God of Things, not as they are, but as they should be.

Suddenly I realized that our young Aviator-teacher was seeing our school life and its problems in larger patterns than the rest of us. His judgments were not only comprehensive, but showed unusual insight. But what surprised me most was the offhand way in which he tossed them off. Conclusions to which I had come through long experience were to him seemingly a matter of immediate knowledge. This is an example:

"How many of us are at our best in a large gathering, or even in a comparatively small group, unless we know the members well? Very few. What is the reason? Because as children we were jumped from the small family group of three or four into an unfamiliar crowd of thirty or forty youngsters that first day at school and all the following days. The result is a life-long self-consciousness, a mental fear of the unknown, of not doing the proper thing. We do not expect the child to leap from the multiplication table to the Einstein theory; nor from the steering of his roller-coaster to the piloting

of an airplane. But we do expect him to enter a strange mass of child humanity and to choose intelligently the right kind of associates for his playmates. Instinctively he clutches and attaches himself to the first group which offers any encouragement. And then begins the struggle between the home influence and this great new influence, a struggle in which the latter almost invariably wins."

Another interesting characteristic of this teacher was his spontaneous and free use of space terms, as shown in the following excerpts from his talks:

"Before we can look for moral uprightness we have to teach our young people to stand on their mental feet. Their education has robbed them of self-reliance and independence and left them lying prone, mentally and spiritually.

"The air becomes a solid to the plane in rapid motion. So one's response to a situation largely determines the situation."

Speaking of the youth problem, he says: "The solution is not to bring our boys and girls back to the surface morality of the past, but to help them through the present phase of disillusioned semi-wisdom into a deepening morality of reason and understanding."

The need of vertical integration is made clear in the following:

"Take a fifteen-year-old boy who is one of a big family of varying ages. This boy does not see himself only as a boy of fifteen. He sees himself as he was when five, or ten, and as he will be at twenty-one, and when he, himself, becomes the father of a family. He patronizes the younger children, but in doing so he imitates the older members and draws upon their knowledge and experience. When he does something destructive or constructive, he sees it, not merely with the eyes of a fifteen-year-old, but through the eyes of the man he will be in a few years. The boy unconsciously learns the process of character development, and his older brother and his father, realizing that they are serving as models, strive to act more rationally and to maintain more consistent standards.

"So we see this growing of the family group, this vertical integration of its members, making for the integrity, not merely of the family, but the integrity of each individual member.

"Let us take this same fifteen-year-old boy and put him into a class of a hundred or more boys and girls of his own age. Suppose that practically all of his time is spent with, and his

companionship is entirely chosen from among, this age-group. Will he not see life only through the eyes of a fifteen-year-old?

"Parents are helpless before the age-group horizontal massing in the big classes of our public schools. And the boy, or the girl, drawn between home-loyalty and respect for parents, on one side, and the tremendous pull of the modern self-sufficient youth-group on the other, impatient with the unconvincing moralizing of elders, accepts, for want of anything better, the destructive, 'get-away-with-it' philosophy of the opportunist and the criminal.

"Is it any wonder that under the pull of such widely varying standards and codes, the morals of both young and old show signs of disintegration? Is it any wonder that, owing to the setting up of tremendous gravitational forces by the massing of our youth, the process of family growth has been reversed, and it is now the mature who follow and imitate the adolescent?

"Integrity, that is, moral integrity, whether of society or of individual, means oneness of standards and purpose. The standards of adolescence are animal rather than human. They do not consider the future good; only the present pleasure. They are the standards of war

and barbarism, the survival of the 'fittest.' And these standards are predominating today, in spite of reform legislation, religion, and the inherent caution of civilized society, because of our great educational machine, which, in classifying according to scholarship attainment alone, is unwittingly setting up a tremendous class consciousness.

"It may be that this phase of youth-ascendency is necessary to throw off the shackles of tradition and to expose the enormous discrepancy between our standards and our practice. But it is also resulting in that same mad chase for material pleasure and emotional excitement which was characteristic of Roman decline. And this indication of decadence is what so seriously alarms even the more conservative of thinking educators and sociologists.

"That our old standards are in the process of disintegrating, there can be no doubt. With the passing generation clinging to outworn beliefs and forgotten traditions; with the rising generation, from the height of superior fact-wisdom, openly scoffing at those beliefs; and with the present generation turning regretfully from the idealism of the past, yet hesitating to embrace the frank paganism of the new youth

—is it then to be wondered that the integrity of society is in a bad way?

"There are two possible remedies for this condition. One is to tear down the wonderful educational machine which is making a Frankenstein of self-sufficient youthful wisdom. The other is to educate our teachers, preachers and parents in sociology and group psychology."

The insight which I find in these citations suggests to me the increased power for seeing beneath the surface that is said to come with altitude. Lindbergh mentions that he was able to see deep into the ocean from a height. Breasted and Badé made use of airplane maps in placing their excavations. Those maps revealed the configuration of buried walls and cities as no amount of surface exploration. Perchance the airplane is giving a vertical sense that will in time carry over into mental processes.

Making Plays and Players Together

[*The Playwright is speaking*] To put Commedia del Arte into this School of Creative Education; to come in touch with the group consciousness of each class of players, in the hope that from this dramatic contact there would spring miraculously a plot—a play; to work as a group upon that play until it evolved into something of beauty and worth both to art and to education: this was the experience, this the dream and the adventure.

At first, imaginatively, at least, I approached it in the grand manner, addressing that sprite, that Ariel of the drama known as Commedia del Arte, saying: "Behold these children, your fellows, hardly touched as yet by any of the frets of civilization. Come down and be among them! Give them your dancing words, your singing gestures!"

But when it came to the actual doing of the thing, the approach was simple. As with adults, so with children, you choose your cast, you tell them the plot, exits, entrances, perhaps a few hints as to the character of the play; you an-

nounce the scene to the audience; either by word of mouth, or by the drawing of a string, you raise the curtain. The play is on.

In Italy, where Commedia del Arte originated, where the plot was traditional, played in the theatre by professional actors, there is no doubt but that the spontaneous result was a more or less finished work of art, closely following the original text; but with children, and even with adults more or less experienced in amateur dramatics, there is always an element of uncertainty. The play, especially with beginners, has an uncanny way of running in directions unknown; instead of keeping in its own dramatic circle, it goes skying off on the curve of a parabola. It is the part of the director to see that the ends make at least a semblance of meeting at the fall of the curtain.

At first, although there was much spirit and enthusiasm among the children, there was little or no spontaneity either in speech or gesture. Conversation was bald and flat; movements clumsy and self-conscious; the impulse was to disclose the action in a few sentences, and so finish the play before it had well begun. A plot had to be repeated three or four times before the players put anything creative into it. Their unaccustomed minds were not able to take in a

whole situation at one hearing, and act upon it instantly in concert. The first few weeks were spent in repetition. It was something like sharpening the pencil before beginning to write.

All of a sudden, however, there were signs of change. Just as in the Montessori system there comes a moment when the child "bursts" into writing, so in this impromptu acting there is a moment when the child speaks and moves without awkwardness or fear. As each individual freed himself, with more or less gusto, the tempo of the whole group changed—quickened. As audience, the children grew more discriminating, more exacting in their demands. As actors, they became more articulate, more conscious in themselves either of success or failure in the rendering of their parts. They stopped begging for repetitions; they clamored daily for new plots or different kinds of plots. With their sharpened wits, they were hungry for new experience.

It was then that I began to see more clearly where we were going and to what end. This realization, I found, meant reversal—a complete turn to the right-about. The spirit had taken the matter into its own hands. It led; I followed.

Commedia del Arte, for children, points the

way to the art, not of the stage, but of life What qualities are required of the child who acts for half an hour in one of these seemingly slight plays? Concentration, imagination, keen-wittedness, savoir faire, dramatic intuition—that tact which springs from loyalty to his group; that instinct which knows when to step forward and take the lead; when to step back and let the other fellow do it; ability to face sudden crises, retrieve mistakes and turn them to advantage; all these things and many more I saw moving darkly potential in the blurred glass of those first attempts.

Next came the question how best to clear the glass; how best to aid the children in the process. The end was, of course, that the children should come to such awareness of their own powers of creation that, given a hint, or an idea, or an emotion, to start with, they could instantaneously make their own play. I began to make plots for them, always with that end in view. The usefulness of a plot depends so definitely on its dramatic possibilities that there was little danger of becoming too literary, or didactic, or remote.

To illustrate: one girl had to go through a whole scene without knowing beforehand what was going to happen. She was told only a few

facts: that she was a woman with a husband and a grown son both employed in a bank; that she was famous in the town for her extraordinary honesty. With this in mind, she had to react to the different characters in the play as they came on with the action. The climax was left entirely in her hands. The drama lay between mother and son, the conflict between mother-love and justice. The plot was tried in three different groups. Each girl decided the question according to her age and temperament. The sixteen-year-old decided in favor of mother-love and sacrifice. The two younger girls, with varying degrees of ruthlessness, delivered up the son to justice.

This brings one to another aspect of Commedia del Arte, the psycho-analytic side of it, the insight it gives into the character and temperament of the players. Though with children this is not so significant as with adults who have more to hide, and therefore more to reveal, yet it is useful so far as it gives a general idea of the child's background and general tendencies.

To return to the illustration. Since this rather severe test could only be given to those who were more advanced in the art of Commedia, I made some experiment with groups.

As for instance, sending on six or eight to create the atmosphere of a servants' hall in the house of a millionaire on the eve of the return of the master from his honeymoon. Each child had to choose his own character—butler, housemaid, or whatever; each child had to give the audience a clear idea of himself in his chosen part; and the group as a whole by its activities had to make the situation clear. This scene was repeated several times before I could send in the other characters, the bride and the groom. The bride in this case, privately instructed, gave the surprise to the groom and the household. For the bride was a Socialist and insisted on treating all the servants as her equal. It was interesting to notice how true to life were the reactions of the servants. They were confused, upset, uncomfortable, much embarrassed at being made to sit down in the presence of their betters. The second act I left for the group to work out for themselves, which they did quite logically, and in the spirit of comedy. The curtain rose on the house in confusion, the servants lording it generally. It fell on the groom's coming to the rescue of his distressed bride, and, with money for a weapon, putting the house in order again.

Variations on these two themes are infinite

but difficult, owing to the fact that the range of plots one can give to the young is restricted. Where the experiment would have led, how long the interest and enthusiasm for Commedia lasts with a group of children, are questions I often ask myself. They can only be answered by further experiment.

Living English with the Group

[*The Essayist speaks*] The life of the group is a peculiarly happy setting for the life of English: the only English that is important, the thing that is lived. It is strange that a truth so obvious should have escaped the rank and file of educators, but so it has. No need to dwell on the traditions, pressures, obsessions that have made literature a burden to young souls. We are about to tell of a life of the classroom where English is lived by each group.

The first one mentioned is described as Ninth Year. After a glance at the conventional reading-list for this year we designate a part of it as optional and reject the rest. In place of the "required" texts we select Melville's *Redburn* for use in class. We read it aloud, in turn, and discover that literature exists to express the adventures of people like ourselves in a vividly conceived and graphically portrayable world. We stop at any time and in any place to talk about the hero or his evocations—of mood, mentality, locality, purpose and place. Each member of the group has an equal opportunity to talk, and all use it, with little urging

from the person at the desk. Having got something of the point of view of the author and a hint as to how experience can be made to live, we try out an experience of our own, real or imagined. These experiences are read aloud to the class and each writer has an opportunity to see how his projections are taken by the rest. We find (to our surprise, in many cases) that what we have somewhat laboriously written out, with a feeling that it is crude, and not at all "good" (since it lacks the polish we expect in printed things), interests the class more than what is read out of a book; seems real to them, and important. A few suggestions are made by the listeners, a little technical correction is made by the person in charge, and this adventure passes back into experience, to become the foundation for a better appreciation of future opportunities to read and write. This way of doing, varied and pliant, adjusted according to authors and abilities, turns out to be a wholly satisfactory group life in English, for the Ninth Year.

In the Tenth Year we find a group already used to literature as a means of making experience objective, and we are able to concentrate on the thing as structure and quality rather than as a series of episodes or moods. Now we

are able to take advantage of the routine schedule of selections, for we are studying the early novel and its precursors. We have an evolution to follow, and we write, vicariously, with Swift and Defoe. We even re-write chapters of Robinson and Gulliver, in order to see how the thing differs from our own notion, and how it feels while the writing is being done. We learn to know Swift, Defoe, Goldsmith and Jane Austen personally, and enter into the spirit of their work. This is all very natural and conservative; no innovation. The only striking thing about it is that nobody in the class seems to feel that any of the work being done is "required," but all act as if they were in the midst of a pleasant adventure, with new vistas opening at every forward move. As a reward for this delightful co-operation in group-living of literature we offer them a very recent modern book. In *The Three Hostages,* which we read together (having first elected four readers with qualifications for this kind of reading), we experience the modern element of suspense and fascination, with the skillful use of such factors as the subconscious, giving a sense of the psychic planes of life.

In the Eleventh and Twelfth Years we must, if we are ever to do it, discover the pupil to him-

self. We assume literature as a medium; we assume some acquaintance with structure and the technique of appreciation. We are face to face with a larger task. Each person is now due to enter upon the life of responsibility for the world's English—a duty laid upon one as a result of the paths traversed.

We are aware, now, that there is good and poor expression, clear and obscure. We have to burrow to the roots of language and travel to the high, shimmering leaves. Everywhere we find life desiring expression. And that life is not foreign to us; so far as we realize it, it is in ourselves.

To accomplish this we devise a new kind of exercise. We take the impression by itself. All our waking moments, we find, are made up of impressions; these, in turn, linked with impulses. We attempt to record these in the clearest way. For days at a time, then, we construct no consecutive fictions; we take and test the impressions we find; learn to recognize them; make excuses to get them; bring the raw material of impressions actually into the room.

So far this might seem an individualistic exercise. But here the group comes in: each member contributes his writing on the common subject, a picture, an art-object, a poem or a para-

graph read, or a passage in some foreign tongue. In this way we see how variously the same theme may affect us; how each contributes his quota to the fuller meaning which waits; and also in this manner, working together, we gather an impetus for the further exploration of spoken or written words. We find our way full of discovery. We find that discussion is the highest art. We learn that our idea, or opinion, or view is worth nothing merely as ours; that it has value as it can present itself acceptably to others and so enrich their world; that the medium of such enrichment is art, which we must cultivate daily, as a duty of common life.

It is impossible to convey in such terms as are at our disposal the leisurely and yet intensified progress of a group through such a field. Leisurely it is, in respect to pages read and manuscript delivered. In respect to illumination it is like fire—a fire that runs through the meadows and does not consume, but invigorates all that it touches, so that experience is alight.

Personality is touched and responds. The deeper areas of consciousness are moved. Here is an expression that must go on. Everyone feels it and knows that where language truly functions, language is life; English becomes a

part of living, a thing to be renewed and vivified every day, by writing, by talking, by thinking in an intelligent way. That means humbly, too, and with self-preoccupation; because form is an impersonal thing, and it is form that commands the objective beauty, which is all that can be perfectly shared.

Summarizing a Year's Work

dean's letter to the class

My Dear Fellow-Students: Almost before we are aware of it, we find ourselves at the end of the college year. It seems but a short while ago that we commenced, so busily occupied we have been, so swiftly the time has passed. But I ask you to pause and look back with me now over the long distance which we have traveled.

I like to think that this has been a year of exploration which we have all been making together, discovering some of the revelations of modern science, tracing the course of human history, delving into the biographies of more than fifty different noted men and women, peering into the recesses of the human mind, and climbing along the higher altitudes of human thinking. I say "we all," for we who have been leading you have been students along with you; we have learned quite as much as you have, and we have been making some discoveries new to us.

You yourselves have been a lively lot, in class as well as out of class—at times quite a hand-

ful. You have found it difficult, naturally, to sit still and keep awake for an hour, so between the alternatives of going to sleep and not sitting still, you sometimes chose the latter. Frequently as the discussion waxed warm it seemed that you all wanted to talk at once. A very lively time it has been. But for the most part it has been lively in the best sense of the word. Your interest has been keen, your response has been quick, you have done some honest work, and you have produced some excellent results. What wrestling matches your discussions have been! How you have matched your wits against one another, all in good humor! You have made intelligent comments; you have given expression to clear-cut opinions and earnest convictions.

In our approach to philosophy—for we have hardly more than approached it—we have been introduced to certain human beings who were philosophers. And we were introduced to them by a queer fellow, this Will Durant, unlike any other man who ever tried to make philosophy readable; so unlike the others that they think of him as physicians think of a quack. All through this book he has never shown his face, yet in presenting the faces and the living personalities and the vivid life sketches and the ideas of the world's most renowned thinkers,

he has done it like a sprite, like a shadowy figure on the stage, with a pen for a wand and a style that is sometimes a dance step and sometimes a sedate walk, in his sober eye often a sly twinkle, now and then tucking his tongue in his cheek as he makes a long-faced comment, a creature curiously compounded of wisdom and wit, of mischief and seriousness. We should have been very stupid if we had not found the philosophers interesting with Durant on the stage. Possibly Aristotle and Kant were not as interesting in real life or as intelligible to their students as Durant has made them. Very likely they turned in their graves while he was writing his pages. Nevertheless, we are indebted to him for his audacity.

Does it not seem to you to have been also a year of movement? Are you where you were last August? Have you not grown? Have you not risen to a higher level of consciousness? Are you not more than ever aware of the long perspective of history reaching back into the past until it loses itself in the mists of prehistoric times and in the nebulae of a growing universe? Has not the world, especially the world of human life, opened out in a vast panorama such as you never before dreamed of? Have you not a more real sense of your kinship with

all mankind? Does not life appear to you more full of wonder and of mystery, and more full of meaning than it ever did? And the future—your own future, that of the human race, that of all things animate and inanimate—are you not more aware of this than you were? Have you not a new sense of the meaning of time, past, present and to come? Have you not heard the "Whisper" of Kipling's *Explorer?*

> Something hidden. Go find it. Go and look behind the ranges.
> Something lost behind the ranges. Lost and waiting for you. Go!

We trust that it has been a year of orientation. That is a term which was used originally in connection with the building of churches. To orient a church was so to locate it with reference to the points of the compass that the worshipers, when kneeling, would be facing east. The term has also been used for the laying out of a map so that its lines of direction should correspond to the points of the compass, or the lines of nature. Now it is a term used figuratively, to put oneself into a correct position or relation with reference to society, to life, to the universe. The point of the compass most important now is not the East, but the West. In medieval times churches were built, as universities were con-

ducted, on the principle of looking backward. The East meant the past. The student had but to "listen, remember, and repeat." The worshiper was to bow before the revelations of ancient seers and to adore the Golden Age of bygone time, with the hope that it might return to earth or be reached in heaven. Bacon, as you know, was one of those who turned men's faces from the East to the West, from the past to the future. By a strange paradox, the career of Columbus illustrates this facing about. His purpose was to prove that the earth was round and that one could reach the East by sailing west. He expected to get to China by crossing the Atlantic. What happened was that he discovered a new world in the West. Since those days, China, the Orient, the past, have been of less importance than the new world, the West, the future. And now China's awakening means that she, too, is facing the future, a future of her own. Westward Ho! is still the cry. Face the future!

To orient oneself is thus to get into correct position, in relation to the past, present and future, to human society, to life, to the universe. We hope that the year has had this effect in a reasonable measure, so that you have now some kind of answer to the three questions which press insistently upon the mind: Whence?

Where? Whither? As one member of the human family, whence came you? That means the past, human history, geologic history, cosmic history. Where are you? That means now, the present, with its obligations and privileges. Whither are you bound? That means the future, with its purposes and possibilities, for you and for society, your vocation, your life-career, the vocation of man, the career of humanity. We are children of the past, "heirs of all the ages," and parents of the future, creators of the world that is to be.

With much the same significance this has been called a year of survey. From the elevation of this hill, standing on the terrace, you have looked around at the panorama of these busy modern cities surrounded by nature's mountain monuments, and you have looked across the bay to the Golden Gate with its vista opening to the West. On this same hillside you have been studying the civilizations of mankind in the setting of nature, with the retrospect of the past and the prospect of the future. Like Lucretius you have climbed to an elevation, not, as he did, to get away from the turmoil of the world and to look down upon it from a position of serene superiority, but to see it in perspective, to discover what meaning and purpose it may have, and to return to it, as you have re-

turned every day to your homes and working places, there to carry on your life as a member of society with a better understanding of what you are, and what human society is, and what life is, and what the world is.

A year of exploration, of discovery, of orientation and survey, a year of movement it has been for you, for all of us. Its meaning is suggested in those lines which I read to you from Whitman's *Open Road.* This is one stage which we have been traveling in our life-journey through time, with our feet upon the earth, moving along a road that comes up out of the past, passes through the present, and stretches on into the future, "endless as it was beginningless." We have traveled, not as so many solitary pilgrims, after the manner of Christian in *Pilgrim's Progress,* but as a company of pilgrims. To be sure, each of us has had to walk upon his own two feet, swiftly or slowly, easily or laboriously, according to his degree of eagerness and ability; each of us a discreet personality different from every other, seeing the world through his own eyes, and under the necessity of making his way alone, in self-reliant independence. Yet we have kept together, with some sense of solidarity, with the by-play of fun and the mutual inspiration of companionship, a little

group of explorers soon to be participating in the civilization of tomorrow.

We have been a little company in a vast throng. Ahead of us, surrounding us, following us, is humanity, all sorts and conditions of men and women, journeyers with us through time, journeyers to whom the universe is a road, or many roads, for traveling souls. Here and there among these journeyers are to be seen the great souls of history. It is good to think that we have been making the acquaintance of some of these great souls—of Socrates and Plato, of the Apostle Paul and Marcus Aurelius, of St. Francis and Michael Angelo, of Bacon and Kant, of Joan of Arc and Josephine, of Lincoln and Pasteur.

> Allons! after the great companions, and to belong to them!

To accompany them and the hosts of mankind as they go—toward what? Toward a Utopia? Toward the City of God? Who knows? "Toward the best," said Whitman, "toward something great."

Introducing the Concept of Relativity Into Teaching

[*The Young Intellectual is speaking*] The relativity of ideas and creeds is fast becoming alarming. Facts which at one time were thought to be absolute are now known to be true only in a relative way. That is, they are dependent always upon certain circumstances and upon a certain point of view. They are true for a single frame of reference only. Given another frame of reference, and an entirely different fact will be required to state the truth of the matter. Gray looks dark against white, yet light against black. Ten miles is long for a morning's walk, yet short for a train journey. If you wish to make a truth of the statement that the day is cold, for example, you must create the proper frame of reference by telling the part of the world, the time of the year, the norm of the weather, and perhaps other things. What is true for Iceland will certainly be untrue for Madagascar, and the hardy peoples of the northern countries will designate as warm a quality called cold by the heat-loving natives of the south. Since, then, a thing is true only in

a certain frame of circumstances, it is always necessary to know that frame of circumstances. One cannot otherwise know anything about the fact itself. It is my belief that education should consist largely of building up a series of proper frames of reference with which the child may accurately judge any phenomenon which is put before him.

It is an attention to this physical and spiritual law of the interdependence of facts that creates the greatest difference between the old education and the new. The old method sought to take some natural or historical phenomenon or some great name in literature and study it apart without reference to the processes and movements which surrounded and ran concurrent with it. In common parlance, there was little attention to background. It will perhaps be advisable to give an example. I take it, that to the majority of people who read nowadays, the works of the eminent Sir Walter Scott represent all that is laborious and uninteresting. This is, of course, very true if one's frame of reference be recent literature and recent ideas. But one has obviously the wrong frame of reference and the fact, or what passes for the fact, cannot therefore be true. One must become acquainted with the proper frame of reference, which is

not recent, not of the present day, but of the earliest years of the nineteenth century. In the latter circumstance the fact that the works of Sir Walter Scott are uninteresting is incorrect. On the other hand, the contrary fact is found to be the true one, namely, that these works *are* interesting. When one knows the strong romantic tendency of Scott's time, the great interest in unearthing medieval remains from the old castles of the day, when one is cognizant of the fact that at this time the novel as a literary form was in one of its early stages, and that in addition people were accustomed to having more leisure to read long works than our present realistic civilization permits, Sir Walter Scott begins to have the importance and interest he deserves. My recollections of the methods of the old school at whose hands I first received my erroneous impression of the writer in question enable me to say that the reason why Sir Walter Scott is dull to most people is that they were forced to take him divorced from his proper entourage and study him as a figure in himself, to stand or fall by the same set of standards by which John Masefield and Joseph Conrad would be judged. This is palpably unfair to the earlier man, as also to the student. One should first have become acquainted with

the whole organism of the society of which the man Scott formed a part, to know the forces that were at work during his lifetime and which made him what he was.

Nor is that all. One must be acquainted not only with the relative *time,* but the relative *place,* which is not in California, nor New York, but in England or Scotland, or Europe generally, or all. One must have assimilated at least a little of the Scotch or English tradition, of hunts, of clan wars, of the Crusades, of a thousand things as yet not registered on the mind of the child. Thus a child of New Hampshire can have no true knowledge of the work of Bret Harte unless he first acquires a knowledge of a state and time foreign to his own; in short, a whole set of circumstances historical, political, social, religious, at present unknown to him. If this method of study be carried out unerringly, the result will be, not a jumble of names and ideas, each struggling to find its relative place, and failing in the attempt, but a co-ordinated whole in which each occupies its proper place relatively, and through which there runs a clearly perceptible series of cause and effect which after many changes and developments results in the present-day product. One is then all the more able to compare the old with the

new, place it exactly in its line of development, and give it its due worth and respect.

For children, who at first have no frame of reference but their own immediate one, that is, the present-day one in which they themselves live, this method is imperative. One must show these young minds the whole panorama of history in order to make them appreciate one single part of it. One must help them to look, not at one great figure objectively and then to judge him on one's own standards, but to study the whole period contemporary with the man and to judge him on the basis of those circumstances. The man was relative to his time; everything he did or said was relative to his time. How, then, can a judgment be passed upon him which does not take into consideration the time as well as the man? The child must be trained so that his judgment will be relative. The finest result of this will be to make the child more tolerant of ideas and customs which at first sight appear to be so at variance with his own, perhaps because they are foreign or perhaps because they are now long out of the fashion. In the moving-picture theatres of the day it is not uncommon to hear some unlearned souls in derisive laughter at the ancient ways of some of the older peoples in older countries

which are thrown on the screen for the enlightenment of the public. This is because such people have only one frame of reference, and any shift to a new set of circumstances paralyzes their critical faculty and substitutes an ignorant contempt.

In this way the spirit of the new education becomes constructive. It seeks to unite all peoples and all countries by means of an enlightened population which is cognizant of as many points of view as possible. Only in this way shall we have tolerance, understanding and sympathy. And only with those come universal peace and good-will.

The second result of studying things from their own point of view and amid their own set of circumstances is that the child becomes more readily and genuinely interested, for he sees that these men whom he studies are not mere names, but that they were once very active flesh and blood working in conjunction with other flesh and blood as does his own at this moment. It gives him the power, not merely to look on the spectacle, but actually to be a part of it himself, to enter into it with the histrionic zeal of a participant. Only in that way will he ever come to know "the best that has been thought and known in the world." He will

come to possess, too, an interest in processes, in development as an abstract principle, which will finally enable him to lay before his eyes the whole story of development from earliest times to the present in a continuous and orderly procession. That this is the new way can be pointed out by the fact that the writers of the day tend to produce not short periodical histories, nor histories of one man alone, but great outlines of the whole historical process as has H. G. Wells and many others. The child's mind, also, should contain such outlines so that each new name he studies he can place in its proper connection. The medieval conception of the flatness of the earth and the formation of heaven can then never be merely contemptible for him because it does not conform to his own frame of reference, for he will know the proper frame of reference, and the idea will at once take on its proper meaning. Neither will Sir Walter Scott be abhorrent to him, for he will not attempt to compare him with John Galsworthy or Sherwood Anderson.

The value of learning about people in their proper groups is immense when applied to present-day problems. A desultory knowledge of Sir Walter Scott or of Christopher Columbus alone will never enable the child to devise

means of bettering the social and economic conditions of his own world. But a thorough and integral knowledge of the social structure of other days, its science, its literature, its art, all taken together as a co-ordinate group, undoubtedly will. And it is that consciousness of the group dependency of other ages, its defects and its permanent elements, which will enable the child to think constructively for the progression of his society without falling into the errors of the peoples whom he has studied.

The spirit of the new education is in the broad and thorough understanding of the relations between what were under the old system disconnected facts or mere knowledge. In the modern democracy the child is taught to believe in the validity and usefulness of even the most humble part of the state of which he is himself a part. So also should he be taught the indispensability of the most humble element in the periods of whatever development he is studying, instead of being taught to believe only in the isolated aristocracy of the few.

We vision a day when all men and women who have the power to project their spirit forth creatively to the coming generation will serve in the cause of education for an hour or two each day.

Adults, as a rule, overlook the fact that children, although immature, are members of the community, and even at an early age are desirous of taking a part in the real world. Young people chafe under the educational process because it defers so long the time when they can share in the life about them. Opportunity should be afforded them for mutual help in a congenial atmosphere. It is not so much what is taught that counts in the growing of citizens as what is experienced in the give-and-take of every-day living, and, because the organic laws are the same for young and old, our aim should be to give the growing child his share of actual life, with its intrinsic value. To teach the child to

be a good citizen when he is grown is to teach him to be a good citizen while he is growing.

The great evil of our civilization, the evil that lies at the root of all others, is the impersonal contacting of human beings. One gets unconsciously to looking upon people as objects. Before we can have the spirit of democracy, we must find means of ending the numbness and machine-like quality of much of our human intercourse. Our first duty to the child in the matter of citizenship is to bring him to realize that others have desires and feelings like himself; that the world of persons about him is his world of persons. Children often lead lives quite detached from others. To bring them into the group, to make them feel that they are needed, is all important.

The thing that a person has of supreme interest and value for others as for himself is his mode of reacting to the world. Indeed, it is the very uniqueness of this reaction that constitutes what we mean by personality. But instead of fostering it, we do everything in our power to crush it. Thus do we sacrifice our chil-

dren to democracy, or rather to our misconception of democracy. We make of that a leveling, not the uplifting process that it should be. We have yet to learn that the greater the differentiation, the greater the integration possible. A group grows in consciousness with each member who brings to it through his personality a new means of comparison. In fine, a person may fulfill his obligations to society only as he is free to realize his personality.

We should think of democracy as a process of growth instead of a form of government. And for this growth there must be more than physical contact. Marching to the same tune, learning the same lessons, do not suffice to bring about that mutual understanding, that give-and-take of thought necessary for spiritual equality without which democracy is but a name. That only six per cent of children complete the eighth grade is due, recent investigation shows, not to the need of going to work, but to a dislike of school. As a natural-history phenomenon the school is not making for the enhancement of life, else this condition would not exist. Though life climbs to a higher level

through association, association alone will not bring that about.

Our schools are dead for want of personal relationship. Nor is this the fault of our teachers; the burden we are throwing on them is a superhuman one. The educational problem would be solved if we were all to contribute of our service to the work of education as we did to that of war, signing up now, as then, for our special qualifications. The personal touch is the one factor that really counts in education, and the one that we have neglected above all others. It is time that we got together on the school problem.

Why is the desire for democracy a universal passion? Greater individual good might be achieved under an autocracy. Men desire democracy because they feel intuitively that it is the way to a larger consciousness. The good that they seek is not wealth or ease, but such opportunity as will enable them to understand and to help in the solution of the common problems of human society, to be in the great movement of life. No amount of legislation can bring this about. Only the contacting of

minds, the learning to think together, will accomplish it.

What education needs above all things else is direct contact between the thinker and the learner. Away with the middleman and the retailer in the exchange of knowledge! Let the student come at truth first-hand. Garfield's conception of a university was a log with Mark Hopkins on one end and himself on the other. Make thinking one with the life-process, and every log in the land will become a university.

"The whole trouble with my boy," says the father, "is that he does not know how to study. I wish you would teach him to concentrate." With this off-hand analysis of his educational problem, and an admonition to Johnny to work hard, he passes his responsibility over to the teacher. And that one bows the neck submissively for the yoke, since there is no absolutism better entrenched in the public mind than this that the "trouble" lies with the school.

The power to concentrate is not to be acquired through discipline or training; it may

come only with consecration of purpose. There must be within the boy's heart a passion partaking of the nature of religious zeal. But this he is not able to engender of himself. Great enthusiasms are super-rational in their origin. Hence we have to look to the boy's overworld to imbue him with that aspiration for knowledge, without which all our efforts are futile.

We cry for a new education, but we hold to the ideals of the old. The demand for studies that are practical, the turning of the schoolroom into a workshop, show that the gods of the market-place are still our gods. Though we cover the globe with mechanisms we may not hope thus to raise humanity to a higher level of consciousness.

Before the individual may become a creative element of the great organic life of humanity he must sense the process as a whole, know something of its joy, and learn to project forth his spirit toward it. If he is brought prematurely to a perception of the material needs of life, there is danger that he may not rise above that level. When drought threatens, the

little plant at once stops growing and goes to flowering that it may accomplish its destiny before too late. Similarly it is with the young mind. The advocates of vocational training overlook the natural tendency of the intellect to lapse into the physical realm. The ways of practical reason are more easy than those which lead to higher creative insight.

The new education will not seek, as did the old, to adapt the individual to a given environment. With the conditions of life changing rapidly, fitness no longer lies in a knowledge of facts which may be soon invalidated, but in the power to grasp a new situation, to see things in their right relation to life as a whole. Specialization, while meeting existing conditions, defeats itself as soon as those conditions change. Now, if ever, we need an all-round education. "Specialization," says Lester Ward, "is always a preparation for destruction." The persistence of the unspecialized is a fundamental law of biology, and that means, of course, the extinction of the specialized. Instead of developing one faculty to the neglect of others, the New Education should seek to give activity to all the faculties wherewith the child is endowed.

The little human animal is born with the instinct for thinking, as other animals are born with the instinct of their kind. Quite after the manner of those does it inherit the experience of the species. But because the instinct coming therefrom is psychic, we have overlooked it. The child early discloses a natural aptitude for causal sequences. Is he not always asking, Why? Indeed, so fundamental is curiosity to all our knowing activity that we would do well to differentiate thinkers on the basis of the kind of curiosity they exercise—the curiosity of the mathematician being of quite a different order from the curiosity of the scientist. It will be objected that the purpose of instinct is to adapt the creature to its environment, and that the child has to be educated to cope successfully with his world. The mistake we make is in taking the physical realm to be the child's world. That he has need of watchful care is because his instinct has to do with thoughts and their relations instead of with objects. Manifestly he requires a thought environment wherein to exercise it. For this there must be a society of his fellow-beings, and what is all important, those must have their functioning on the thought plane.

We have to live up, not down, to our children. An *unlearned* increment accrues to the psychic instinct with each generation. The boy is father to the man in that he has the greater experience to his inheritance; witness the intuitive sense that mere youngsters show for electrical devices. Young persons are much more open to new concepts than we older ones for the reason that they have come upon the life-road farther along than ourselves.

The great error of our educational philosophy comes from our assuming that learning can be made a thing apart. The more we relegate education to the school, the more we are failing to educate. The babe feels himself a part of the life-process of the family and so grows with it. His learning is one with the joy of living. Mental digestion is for him quite as natural a process as is the bodily one; he is as eager to learn as to eat. But with the coming of school years he is set down to chew the dry fodder of facts against a future need —a bovine practice, to say the least! Then it is that the little intellect rebels; up to this time it has rejoiced in its normal feeding. The problem of education is to find how to continue

the process of mental and spiritual growth begun in the home. In order to keep the learning-process one of progressive growth for our children we must live it with them. To be worth while in their eyes, the things that they are doing and thinking must be of a kind with the things that we are doing and thinking. The eagerness of the youth to leave school and go to work is due to the biological need of becoming one with his world of persons. He feels himself shut out of life, and imagines that is the way to become a part of it.

Would you know how the child grows, study the growing of other plants. The little mind finds its setting and draws its nutriment from its intellectual and moral milieu quite after the manner of plants in respect to their environment. The family life, the home atmosphere, are the sources of its supply. The school at its best is but a psychic conservatory. Even with the most approved methods it can do little toward redeeming the long periods of mental drought and devitalized atmosphere to which neglect only too often subjects the child's mind.

We are failing in education because we are

failing in life itself. In our own likeness we create our children. We strive for material goods and grieve that they do not aspire to spiritual ones. If the youth has no earnest purpose toward learning it is because the adult has none. His attitude is an index of the collective attitude of his world.

PART III

CROSS-SECTIONS THROUGH THE SCHOOL

"But now we are delivered from the law,
that being dead wherein we were held;
that we should serve in newness of spirit,
and not in the oldness of the letter."

The Happy Learning of Arithmetic

Knowing that a harmonious relationship with one's outer realm is possible only if there is concord within one's inner realm, my first concern in establishing a demonstration school for creative group-work was to put the learning of those subjects which every child is required to take—the so-called fundamental subjects—upon as happy a basis as possible. A long experience had taught me that the child who is worried and distraught over his arithmetic lesson will not be a creative component of any group in which he is put to work. Accordingly I sought a teacher with more than the usual understanding of child psychology, and was so fortunate as to secure one with a fine comprehension of how the growing mind reacts to the truths of number.

Inasmuch as this teacher placed great emphasis upon individual study and progress, I did not look for any direct contribution to group psychology from her work. But ten years of watching the child-group in varied

activities has brought me to the opinion that her system of teaching arithmetic struck out principles fundamental to all group integration; and more, that the remarkable success of her system was due largely to those very principles.

Simply stated, they are:

1. The integrative process is from below upwards.

2. This process must needs start with unity of ideas in the sub-conscious mind of the child.

3. To make the unity progressive, the mental attitude must be one of synthetic intuition.

That mathematical reasoning has of itself a kind of creative virtue*, as Henri Poincaré has said, was a profound belief of this rare teacher. As soon as the child has added one to one he is eager to count, for he has a direct intuition of his power to repeat indefinitely the same process and wants to exercise that power. This early number experience of a child is destined, she believed, to become the determining factor of his entire mathematical work.

**Science and Hypothesis,* Henri Poincaré.

The reason that so many children hate and fear arithmetic, and so many adults are unable to progress far in mathematics, is because they were not properly taught in those beginning years. Buried deep in the unconscious mind is some wrong idea of number, some arithmetic complex.

My own experience in psycho-analyzing hundreds of high school and university students for mathematical difficulties bears out this claim. Indeed, I would go further and say that the individual's early experience in number determines his entire thought-life. Through counting and the using of the simple number processes the child is learning to reason by recurrence. Now, such reasoning constitutes the beginnings of mathematical induction, which Poincaré declares to be the one process whereby the mind can ascend, "for from it alone can we learn something new. Without the aid of this induction—construction would be powerless to create science." But mathematical induction is only possible if the same operation can be repeated indefinitely. Now, the delimiting cause may lie in the subject considered, in which case that subject can never become a science, or it may lie in the mind of the individual. If the latter, he will lack, I

venture to say, the synthetic intuition essential to all creative thinking.

In our teaching of arithmetic* great care is taken that the pupils, particularly the beginners, receive no wrong impressions through eye or ear. The little one is permitted to count only as far as he can do so accurately. As soon as he skips a number someone takes up the counting for him, so that the sounds are recorded on his mind in their true sequence. The instruction to teachers is always: "When your pupils get wrong ideas do not labor to show them the right thing in contrast to the wrong; you will only make matters worse. Quickly show the right way, and then turn to something else. Then on another day lead carefully up to that wherein the children were confused." For the same reason "choosing sides" in the number games is not allowed because, as a result of the rivalries thus induced, the zest of the play depends upon the making of mistakes by the opposing side. The children listen eagerly for those mistakes and all except the clearest minded pupils get out of the play an uncertain mixture of errors and corrections.

"For the storing of the unconscious mind

*Since the death of its inaugurator this demonstration has been carried on by one of her teacher-disciples.

with number truths we place," said our teacher, "great value upon visualization. Instead of leaving the child to form irregular, inconvenient mental diagrams of the number series, we give him, through charts, a visible representation of the series up to one hundred arranged in columns of ten. By means of these charts he is led to make his own discoveries of the facts of number, and to perceive the facts pointed out by other pupils. Skillfully guided games and occupations produce a realization of numbers that greatly facilitates his after work and gives him a sense of number relations that could not possibly be acquired by routine drill and enforced tasks. Every day as the children come back to their happy social play with the numbers they gain a clearer idea of them in their unchanging sequence. Gradually the mental picture of the series is formed and becomes a part of their mental furnishings. They can call it up with more or less distinctness just as they call up mental pictures of their homes or schools. A child of six or seven who has lived for some time in a large, amply-furnished home knows the forms, the locations and the names of hundreds of objects in the house. When sent to get a piece of music lying on the piano he does not make the mistake of

going into the kitchen after it, because his mental picture of the interior of the house locates the piano in a certain part of the parlor. No one has drilled him upon the names, places and forms of the articles in the house. He has learned the forms and places without conscious effort, by contact with the objects often repeated. He has learned their names by auditory contact, by hearing them often applied to the objects. And so in our early games and occupations we put the child in contact with numbers, in an agreeable way, in order that he may learn their names, their places in the series, and the forms of their symbols. While gaining this knowledge he is unconsciously learning many number facts, just as by his ordinary play he learns without effort many important facts about this great complex world in which he is an active and inquisitive newcomer.

"It is our belief that once the unconscious mind is properly prepared the conscious mind will function spontaneously toward number and the child will, through the discovery of facts for himself, find a truly creative joy in his arithmetic work.

"The games and occupations in the classroom are always carried on in the most

leisurely way. This is done, not only to prevent errors in the work, but to avoid overstimulation of the children's minds and nervous systems. Although much freedom is allowed, the classroom is not ruled by children's whims. Ideals of courtesy prevail. Praise and blame are alike avoided as having no place in the scheme of true teaching. Every child advances at his own rate through quiet, happy work.

"Does all this seem to you impracticable? On the contrary, it is a bit of the most practicable, hard-headed sort of thinking. It was not sentiment nor visionary idealism that prevented Luther Burbank from tearing open rosebuds to get fine, full-grown roses. His practical knowledge of the laws that govern those living organisms called plants led him instead to wait for their development, in the meanwhile protecting them from force and keeping them in the most favorable conditions of soil and sun. And it is practical knowledge of the laws governing the minds of children that leads a teacher to wait for the natural, unforced development of the mathematical sense of her pupils, keeping them in the meanwhile in the most educative environment possible and in the sunshine of her loving expectancy."

Presenting the Panorama of Literature

[*Report of the Head of the English Department*] The masterpieces of literature possess for those minds that can grasp it an organic quality, a wholeness made out of parts. Its basis may be of many sorts, among them the much-bruited singleness of effect in the well-composed short story, the satisfying synthesis of emotion in Shakespeare's plays, the knit, crowded mesh of circumstance by means of which Thackeray makes us feel the fullness of his knowledge of the folk he writes about, the clamorous symphony of Carlyle. This organic quality is most nearly perfect in the highest works, for instance the drama of Sophocles, and finds its reason for existence in the matured mind, which loves completeness. It seems a mistake, however, that teachers of literature should recognize this aspect of unity in literature and lose sight of, or ignore, a larger phase. For no book, however self-contained, is more than a milestone on the march when we consider the long course of literature. And the purpose of education is not merely the deciphering of milestones, but

more the apprehension of the trend of the march.

This statement is but one more application of the commonly received distinction between the nature of a thing and its significance.* In later life we may read books in order to obtain the value which is in them, but unless we have then some idea of the whole fabric of which the work we peruse is part, our judgment is likely to be biased, our increment of good perhaps lost. Such misjudgment and such loss will be less frequent if in plastic years we study works not only to learn their message but also to discover their part in the advancing sweep.

The importance of history in such a comprehensive scheme of teaching is manifest. For if we intend to teach the sequence of ideas, then the sequence of events with which these ideas are inevitably connected must be known in order to obtain balance and proportion of estimates. In other words, as a separate paper in this series shows, any thing properly studied must be seen in its Frame of Reference; but we must at the same time remember that the backgrounds of history are not discreet but fluent. A sense of the continuity of history and a sense of the continuity of literature will com-

*James, *Varieties of Religious Experience*, 1902—page 4.

plement each other, and make, we believe, for a truer notion of the world.

We must do away with the teaching of literature in shreds and patches, with the isolation of literary phenomena, with the failure adequately to explain cause and effect in this field of study. It is not fair to the child to leave undisturbed in its mind the idea that Queen Elizabeth and Queen Victoria were sisters; no more is it fair to expect orderly knowledge of literary classics from the pupil whose course has been planned with admirable confusion. Instead of giving him a glimpse here and there, backward and forward along the road, let us bring him along the path from one end to the other, so that he may note and remember the look and position of each landmark.

It is not possible in the earlier grades to impress on pupils a scheme of development for which their minds are not sufficiently matured and in which they cannot be interested. But it is here (in the eighth and ninth years of school) that excellent preparation may be made for later studies in the growth of literature. Here we may teach reading in the larger sense: understanding and assimilating what is offered on the printed page.

In the eighth grade the beginning in the art

of reading is made by the creation in the child's mind of a proper scene and setting for suitable types of story. The types which have been selected thus far as best fitted for appreciation are medievalism and the ancient Hellenism of Homer. Since no book can be understood without a knowledge of the life forces which are dealt with in it, the class is inducted into the spirit of medieval times before reading several of the swifter moving works of Scott. Some knowledge of the history, some of the thought, some of the picturesqueness of those days is necessary before the eighth graders can appreciate and enjoy *Quentin Durward, The Talisman, Rob Roy, The Lady of the Lake* and *Marmion.* A similar service is performed in the case of the Greek background, particularly in respect to the myths of the gods and the Trojan story, before Hawthorne's *Wonder Book* is taken up, and this in turn serves as a fitting preparation for the careful reading of the *Odyssey.* Thus, in two semesters' work, the class comes to understand and sympathize with, from every point of view, two great periods in world history, besides becoming acquainted with several great works of literature.

In the ninth year books of narratives of

graded difficulties are rather closely studied in group recitation. These volumes range from *Bob, Son of Battle* through some of Scott's more difficult stories, such as *Guy Mannering* and *Woodstock* and include *Lorna Doone* and the *House of Seven Gables.* By the close of the semester the class has achieved not only knowledge of the story matter, but increased power in vocabulary, in expression, in culture, in thinking, in comprehension and in sympathetic understanding of varied ideas and character.

In the tenth year we begin a thorough-going study of English literature according to types. The novel is first studied because it has the most appeal for the younger group. Here the subject matter is chronological, beginning with the germ development of the modern novel in the eighteenth century, and coming far enough toward today to give at least a glimpse of the more prominent contemporary novel writers. The emphasis here is always upon the stream of continuity. We study each man and his works to find not only what they were in themselves, but to discover, if we can, what new was contributed to the current of thought and expression, and what of the old was preserved. Thus, for example, in *Robinson Crusoe* we

observe the minute realism of Defoe; in *Gulliver's Travels* we see the same realism turned to the ends of satire; in the *Vicar of Wakefield* realism and didacticism are found combined in a pleasing story of domestic life in which the author's personality glints through. Thus we come on down through the eerie "Gothics," blustering Sir Walter Scott, trenchant Jane Austen, Dickens, the reformer, Thackeray with his satiric pen, George Eliot philosophizing in the midst of country scenes. Eight of the leading English novelists are thus studied in sequence and at the conclusion of the term those of secondary importance are met through the medium of one or two of their works perused quickly for the pleasure of reading. When each of these is approached the student is cautioned to "place" him in time and period and to "orient" him by comparing him with other authors in his own circle.

Since the method has been grasped and applied in the tenth grade, those in the eleventh are ready to use their new tool of study in a more subtle and complex type of literature. Here the vista is much longer than in the case of the novels, since it extends from the very beginnings of Anglo-Saxon writing to the works of the present day. Hence, we begin here with

a quick review of the history of the English language, since poetry is closely identified with this growth. Specimens of Anglo-Saxon and of the types of Middle English are shown and read to the students before the poetry of these times is considered. The grist of the course is the great Anglo-Saxon epic *Beowulf;* then Anglo-Norman poetry and the culmination in Chaucer; the relapse before the re-awakening in Elizabeth's time; the Cavaliers and Puritans with their mystic and martial verse; the true classicism which preceded the eighteenth century and the spurious classicism of the eighteenth century itself; the fierce fire of the romantic revolt; the peace of the Victorians, vaguely troubled by Darwin and his uncouth teachings. Something is done also with contemporary verse and the fact is emphasized that we are living today in a period of poetry which future ages will look back upon as assuredly great. By bringing in the factor of language, the ideas of continuity, of cause and effect, of influence and repulsion, of unity, are installed in the student's mind.

In the twelfth year we may apply the same method more intensively and rapidly; two great types of literature are studied in these semesters. We begin with Shakespeare, but

we do not treat him as a fixed phenomenon standing unescapably in the midst of the flux and flow of literary influences. We study rather the slow development of medieval drama, the gathering of new forces, the inclusion of new types, the work of Shakespeare's early contemporaries, until we realize that he was a man among the rest, a man whose causes as well as influences lie patent for the student of literature. From Shakespeare the vacillating course of the drama is carried on until we reach Shaw, Barrie and other present-day exponents. The second semester is devoted to the English essay, beginning with Francis Bacon, conscious inventor of the form. Herein is opportunity for a very wide and loosely associated group of material, for the inclusion of such authors as Carlyle and Ruskin exemplified in their longer works. Since now we are dealing with the literature primarily of ideas, the class finds the greatest challenge to its power.

To summarize: an objective in the teaching of literature is acquaintance with groups and not individuals. It is the tracing of currents, the mastery of periods; it is the gaining of the organic sense in the writings of man.

Growing the Scientific Attitude of Mind in the Youth

It was not until near the close of her six years of teaching for us that I came to understand fully what our first instructor in Chemistry and Physics was striving for. Although I knew that her students loved their work and acquired through it an insight into scientific method rarely found in boys and girls of their age, I have been impatient when, as sometimes happened, a student did not cover the prescribed number of experiments in the school year. But if I urged pressure, always her answer was that scientific training is a matter of growth and development, and not of experiments, and that time is an essential element in that growth.

That science teaching, as practiced by the schools, is failing largely of its ends, as she contends, is borne out by the following statement of the President of Columbia University. In one of his annual reports Dr. Butler says: "The extensive and intensive study of natural science, now carried on in our schools and colleges over more than a full generation, has

made no impression whatever upon the public mind. That mind continues to come to its conclusions and to formulate its choices with serene unconcern as to whether any such thing as scientific method exists."

Manifestly, there has been something wrong with the teaching. And the trouble is not far to seek. The examination system puts a premium upon the quick acquisition of knowledge, and the facts of science are more easily imparted through the lecture than through the laboratory. Although the student is given the opportunity to perform the experiment for himself, the emphasis is usually placed on the result, not on the process.

We pride ourselves that we live in a scientific age. But our interest is not in science. Our age is an acquisitive age. We value science for what it gives us in power over nature and in physical comfort. This attitude of the public mind toward science finds reflection in the school room, and so the vicious circle is maintained.

Science study should enable the student to observe correctly and to record accurately; and more, it should develop in him the scientific mind toward all experience. It was the belief of this able instructor of ours that if a young

person has been thus trained we need have no concern for his knowledge of scientific facts.

The world is looking to science for a general social reconstruction, and certain it is that this reconstruction must begin in the schools. It is not sufficient that science is taught in them. It must be taught rightly. For that the change has first to be made, as Sanderson of Oundle has emphasized again and again in his lectures, from competitive methods and ideals to co-operative methods. Only then will the spirit of acquisitiveness give place to the spirit of creativeness. When we have made our instruction in science "the attentive consideration of common experience," we shall have a scientific-minded public, and not before.

Teaching the New Geometry

There is no more dramatic, no more significant event in the whole history of thought than the discovery of non-Euclidean geometry. With one blow the human mind was freed from the spatial matrix in which it had been imbedded for centuries. Though beautiful in its logical form—"of pure crystal," the geometry of Euclid had confined the intellectual life of man to the space of sense-experience. In fact, he did not know that there was any other space, so closely had it held his mind within its adamantine structure. The discovery of the new geometry revealed the possibility of conceptual spaces. It was manifest that a distinction had to be made between the world of sense and the world of thought; that, although man's physical activities are limited to the space about him, his mental and spiritual activities have a larger freedom.

For two thousand years mathematicians had wrestled with Euclid's fifth postulate, which is in effect that through a point there is one, and but one line, parallel to a given line. Despite

their failure to prove this so-called parallel-axiom, they never doubted its truth. It was left for the adventurous genius of Lobachevski and Bolyai to demonstrate that a consistent geometry could be built up on the assumption that there is more than one such line. And when Riemann had shown that a geometry could be constructed upon the postulate that no two lines of a plane are parallel it was evident that the parallel-axiom was after all only a postulate, as Euclid had taken it to be. As the result of this discovery there are now three geometries: one Euclidean and two non-Euclidean. "In respect of soundness—inner consistency—self-compatibility—logical concordance among the parts of each—the three geometries are on exactly the same level. . . . The three geometries are equally legitimate children of one spirit—the geometrizing spirit, which Plato thought divine." *

Notwithstanding the radical change that has come over the face of geometry, its teaching remains practically unaltered. The youth of today is taught the same axioms and theorems as the youth of old. For the usual teacher, the geometry of Euclid still constitutes a body of eternally valid truths concerning the nature of

**Mathematical Philosophy*, C. J. Keyser.

space. He does not distinguish between perceptual and conceptual space, and therein lies the *raison d'être* of this gap between theory and practice. But although Euclidean geometry still suffices for the building of houses and bridges, it no longer answers for the building of minds. Logical processes have advanced. Would we give our youth the foundation for a rational life we have to acquaint them with the revolution in thought brought about by the discovery of non-Euclidean geometry.

Have we then to teach three geometries where we now teach one? No, but we can present that one so as to make clear its logical relation to the others.* And in doing so we shall find that we have greatly increased the pedagogical value of its study.

In conducting reviews of plane geometry I find that the students easily rearrange the theorems so as to make its study serve as an introduction to all geometries. Starting with the simple postulate that any figure may be moved from one position in space to another, without change of size or shape, we go through the text looking for such theorems as can be proved without further assumptions. The students are delighted to find quite a group of

**Syllabus of Plane Geometry,* Cora L. Williams.

theorems which, put to practical test, hold for all surfaces of constant curvature. We then add as our second postulate: Through a given point there is at least one straight line which does not cut a given straight line, however far produced. This, of course, excludes the sphere and other surfaces of positive curvature. Our search is now more difficult, but we gather a number of theorems before we are forced to set up the parallel postulate, and finally narrow our geometry down to the Euclidean plane.

Instead of five books the theorems of plane geometry now stand arranged in three: first, those which are true for parabolic, hyperbolic, and elliptic geometries; second, those which are true of parabolic and hyperbolic geometries; and third, those which are true for parabolic geometry only. The student has seen in what respects the foundations of these three geometries are the same and in what respects they differ. He has seen also that they have in common those theorems, and only those theorems, which are deducible from the assumptions which they hold in common.

He knows also what theorems are distinctive to each geometry. For instance, he knows that the sum of the angles of a triangle is exactly two right angles only in parabolic geometry,

that in hyperbolic and elliptic geometries the angle-sum varies with the size of the triangle; in hyperbolic geometry being always less than two right angles and in elliptical always more.

But the student learns what is more important than any mathematical knowledge; namely, that the ultimate test of truth is not, Does it work? but, Does it find its highest meaning in the unchanging relations and eternal laws of logical thought?

A Report from the Language Department

It is interesting to observe how language, which is notably a group-product, lends itself to our theory and practice of group-education. The ability to communicate ideas through speech is, we are told, the measure of our value as social beings. Our words are the symbols of our need to share experience and, through sharing, to enlarge it. But let the report of one of our language classes tell its own tale.

It was a small class. There were only five students. But the psychological diversity of these five sufficed for the building of an integrated group.

There was *A*, a conscientious "grind." A boy of sterling moral qualities, but slow to think. Slow to think but quick to act, and eager, once he was able to grasp the idea. A boy for whom drill and repetition secured the best results, and to whom, consequently, modified assignments were given, which allowed sufficient time for drill and repetition. Such a student's value to his group can hardly be estimated. His willingness to work over-time, his faith in his ultimate attainment, inspired in his

comrades a profound respect for the fine human qualities he manifested. And also, his fellow-students, in having to invent for his sake the plainest possible methods of approach to problems more easily worked out by their naturally facile minds, derived the very valuable benefit of sifting down and carefully clarifying their own processes. For their patience they had the satisfaction of seeing the boy's expression gradually change from one of bewilderment to one of keen surprise and pleasure. Through the group the value of the moment was enhanced for *A*, who in turn heightened the power of his group.

B, in particular, interested himself in *A's* work, assuming voluntarily the task of helping him privately over the most difficult places. Latterly, *B* seemed to feel this responsibility quite as much as responsibility for his own work, and in our opinion his excellent attainment was due more to this self-imposed labor of love than to the instruction he received in class.

C was peculiarly well-favored. She had been in our school from her earliest years, her home environment co-operated with us heartily, and she herself possessed both native wit and a logical mind. Such a student's contribution to

the group was bound to be valuable. We made it a point to call on her for written and oral elucidation of difficult points, for we believe in the marked advantage of first impressions made through correct rather than corrected forms. It became *C's* responsibility to set the pace for the others. It was her great virtue that she could do this without showing any feeling of superiority. Needless to say, her example stimulated the less able students. What one of their own classmates could accomplish, they, too, could strive to accomplish.

D's case, and her contribution to her class, possessed a value that was altogether different and extremely interesting. Here was a young girl with an artist's intuition and an artist's vision. True to her type, she had no love of drudgery. She throve best on novelty and adventure, delighting to explore new avenues when these were opened up in a spirit of fancy and light-hearted speculation. She got at new forms, not directly, but by their analogy with old ones. Many a time she "guessed" that thus-and-so was the case, and as a rule she guessed right. The effect of this intuitive method upon the other members of the class was not to disturb their studious habits, but rather to build up their confidence in their own

"feeling" for the language, to convince them that intuition, as well as reason, is essential to perfect understanding. A student of this temperament would, we believe, fail if subjected to a strict reasoning method of approach to a language, whereas, allowed to work intuitively and to absorb without conscious effort, either by reading or through the genial play of conversational method, she would acquire it rapidly and easily.

In our school we have an early morning custom which is fraught with various and valuable results. It is our habit to assemble, students and teachers, in the atrium of the main building and to stand informally listening, for five minutes, to a talk on events—timely events, as a rule, but events always of far-reaching import—given by the Principal. Thus we begin the day by stepping for a moment out of the day. "We look before and after," surrender ourselves to the large thought of that immeasurable Time that lies behind us and that stretches before us into infinity. No matter what the immediate topic of discussion, the point of view, the enveloping and "creating" atmosphere of the swift, stimulating address is always as large as the universe.

Now, in a foreign language, it is particularly

difficult to make clear the terms for abstractions and for this reason we find these early-morning talks especially helpful in our classes. Coming directly to the classroom we proceed without delay to the consideration of the outstanding features of the morning talk. Still warm with enthusiasm and alive with interest, we more readily conquer the foreign equivalents of such baffling coin-of-conversation as peace, co-operation, silence, loyalty, ambition, and so on. Here again the element of "feeling" for words is powerful. Here again the smaller group is greatened through association with the larger group.

Giving Historical Perspective

[*Report of the Head of the History Department*] The adventurer of old climbed "a peak in Darien." There he beheld not only the tortuous paths of his ascent but the vast expanse of the Pacific. New vistas unrolled before him, new futures stretched away into that limitless blue distance. The mountain, that had seemed a barrier, became a rare opportunity.

The study of history presents a similar illusion of difficulty. To the youth intent on pressing forward it is hard to believe that at the summit of his arduous toil a glorious panorama will unfold itself, to re-color and re-shape his thought that had else never reached beyond the confines of the valley below. Yet it is true. The same thrill of adventure, the same joy of accomplishment, the same sense of new-found power to take up the compelling challenge of the future that set the blood of Cortez to tingling, will requite the earnest student of history.

Time-tables and maps assume a new interest and significance in relation to a prospective journey. The Seventh Grade busies itself charting the lands and seas which are the

scenes of man's great adventure. Continents and climate, mountain-barriers and river-courses, occupations and products are not alone facts but the material for romance. An eager group learns to pronounce hard names, to spell long words, as a preparation for its journey. Maps give the setting for a thrilling drama, to be experienced, not merely drawn. Thus the world consciousness of the young explorers is widened and deepened. They are ready to welcome new characters upon the stage thus carefully set.

Biography is the absorbing concern of the Eighth Grade. Great men and women of all times and countries become its daily companions. To them Ikhnaton is as real and vital, as comprehensible and compelling in interest as George Washington. The stories of Homer make his heroes live again "on the windy plains of Ilium," among the "Isles of Greece," or driven by the gods to lands unknown. Daniel Boone and Robert Bruce are not unworthy companions for these daring souls, though separated from them by long centuries. Great writers and inventors have a place beside empire-builders and explorers. The unity is one of spirit, not of time or place. And so the end of the year finds a host of new

friends assembled, ready to be called on the stage at a moment's notice, to play their respective parts in the great historical drama.

The rehearsal of some of the simpler scenes of man's early history will call for all the imaginative powers previously developed. In addition, a sense of logical sequence is needed, and this comes slowly. Let us strip from our present complex lives all but the barest necessities and start our building on the basis of the fundamental needs of all human life. Why does man work? What forced him to think? How do we happen to live in groups? These are questions which immediately arise. As we reach some solution of them, we find ourselves beginning what is known as "Ancient History." The motives, causes, results involved, we find to be strangely modern. Individuals are no longer isolated figures but are seen as the result of the cumulative experience of a people. Such lofty souls are the crowning glory of each civilization and serve to interpret it. Zoroaster speaks for Persia, Praxiteles embodies the art of Greece in deathless form, Cæsar visions an empire which Augustus fulfills. So the larger meanings of life unfold and the student begins to see the great cultures as organic wholes, to form an estimate of their

values for their time, of their lasting contributions to the future. A class is tracing the great Indo-European migration which brought about the overthrow of the ancient but decadent culture of Babylon. The question arises: which had the truer civilization, mighty Babylon or nomad Persia? The modern youth goes straight to the heart of the problem. Persia had a greater physical strength and cleanliness, it had better morals, a higher religion. What is civilization? What indeed!

With a growing maturity, the scenes of history tend to group themselves into Acts according to certain themes. More or less vaguely, these are seen as parts in a great drama through which "one increasing purpose runs." It is the ability to see events, characters, conditions in this perspective that tests the growing powers of the young historian. Democracy, religion, nationalism, industrialism are some of the varied patterns. Back and forth the shuttle flies from past and through present to future and back again, weaving a design only perceptible from a distance and with eyes trained to see. And how shall we gain this perspective? A study is being made of England and a detailed map is before the class, that it may grasp the importance of geographical relations. Sud-

denly a pupil asks for a world map, that England's size and significance in relation to the whole may be seen. What a difference! And yet, "See how great an influence little England has had on the world, what vast areas she controls!" exclaims one student. By what right, by what means, with what results, are questions which arise in quick succession, and we find ourselves a part of world history. This is our world, to which all the past has contributed, for the future of which we are responsible. No longer are we spectators at a play, we are ourselves the actors in it.

America's part in the drama of mankind is the last to be studied by the high school pupil. To him it should be the most thrilling of all because so intimately a part of him. His power to appreciate and interpret it is the final test of his historical ability. At this point events are not of prime significance, though they must be known; nor are conditions the only determining factors. Even great movements do not alone guide the course of history. Great personalities are the most compelling factors, since they have the power to recreate the groups that produced them. Abraham Lincoln is the outstanding example of a group emergent lifting the people to a higher level, and there

are many others. But the weakness as well as the strength of a period thus finds expression. The narrow sectionalism and bitter antagonism which prevailed during the administration of his predecessor, became, through Andrew Jackson, the battle-cry of his party and finally resulted in the "spoils system," the curse of the country for decades. A class which reaches this conclusion for itself holds in its hand the key to a clearer understanding of history.

Following in the footsteps of America's great leaders, the young student finds himself climbing the mountain peak of Internationalism. From this eminence the roads traversed by the pilgrims of the past have a strange appearance. They look not at all as they did when seen from the snug crevice in the shoulder of the mountain called "Americanism." Still more surprising, this is not the end of the road; it winds mysteriously on toward the horizon. New goals appear, new purposes beckon, new strength comes to meet new needs, and our traveler is eager to be off again, for another mountain is lifting its head.

Extending Kindergarten Methods Upward

Discussing the teaching problem in universities, Professor Guy Tugwell says, "We have to begin all over; and, curiously enough, the place we are having to go to learn how to teach is the kindergarten—for there teachers know how to teach."

Through watching our Kindergartener conduct the morning circles with our little ones, I came to the same conclusion two years ago, and asked her to make the experiment of applying the kindergarten principles to the teaching of nature science up through the grades, beginning with the fourth and reaching into the high school. The results show that Froebel's educational philosophy has no age limits.

The secret of its teaching-worth alike for older and younger pupils is due, I believe, to the fact that it is based upon a true concept of the group. The group, for Froebel, is more than a spatial congregation; it is a conscious relation. Each and every member is made to feel himself a vital part of the group. Before engaging in any activity as a whole, the members have a common understanding as to the

purpose of the group. This unity of consciousness is the fundamental idea, as I see it, of the kindergarten.

The function of the teacher is to create the self-conscious unity of the group, not to dominate by her personality, as many think. The question arises: What of individual freedom? It is just this conscious social relation, with its mutual recognition of personal ends, which makes that freedom possible. Observing the development of our pupils under this method, I am convinced that with the widening out of consciousness, there comes a deepening of consciousness. The individual finds himself through his fellows.

Rarely in the coming of people together for deliberative purposes are all the conditions for successful group-thinking fulfilled. Perhaps the nearest approach to it that we have record of was when Socrates met with his friends in the inner court of Cephalus' house. But the method of the Greek dialectic was one of analysis, and although that resulted in clear, logical thinking, it was of an argumentative nature and had not, I believe, the creative power that synthesis has for producing new ideas. It is a far cry from Athens to a modern schoolroom, but I venture to say that our dis-

ciple of Froebel is coming nearer to the laws of true group-thinking than did the famous groups of that famous city.

Making Geography Dynamic

[*The Teacher is speaking*] A class of seventh-grade boys and girls were studying Africa. To be sure the geography book told about the climate, the vegetation, the natural resources, the European possessions, and the exports. But what cares a twelve-year-old boy that "South Africa is the part where great mineral wealth has been discovered," or of what concern is it to him that "along the coast sugar cane, bananas, pineapple and rice are raised." He shifts restlessly in his seat and gazes out of the window for more desirable facts.

But plan an imaginary trip to Africa, and presto-change! Every back is straightened and every eye sparkles with the dream. For did not Robert make a dozen passports (identical copies of the one in his mother's trunk) and did he not secure a dozen signatures and a dozen snapshots to complete the requirements? Did he not painstakingly apply himself to the writing of a good business letter to be sent to Union Castle, seeking information about its steamship lines? Did he not peruse the letters, the charts,

the pamphlets and time tables to fix a route and a date when all the classes could go? Did he not, in conjunction with his group, figure and figure to reduce the expense to which they would be put if they decided to carry out their plans of traveling first class? Did they not buckle down to the study of "first aids" in order to qualify themselves for the exigencies of equatorial and primitive life? Did they not apply themselves to diligent research to acquaint themselves with the weather and the social conditions of those climes through which they would travel, in order that they might pack their trunks with only necessary and appropriate baggage? All this was done, and more, too.

The day arrived when the steamer was scheduled to leave New York. Only after the Statue of Liberty was left far behind did they realize where fancy had led them. "Oh! it's just as though we were really going, isn't it?" they cried.

[*Its Principal speaking*] A few days ago the Very Littlest One said thoughtfully to me, "I wish I was growed up, 'cos I want to be a teacher so quick!" I asked her the reason for this unusual aspiration, and she explained, "The children will come *running in*—I shall have school before breakfast, and nine o'clock too—and they will 'splain all their thinkings to *me;* and then I shall say, 'Very well, now shall we start with this idea of Peter's?' and," she added firmly, "I shall always choose Peter's ideas."

This explanation, the last clause excepted, seemed to me to show that even the Littlest One had grasped the ideals which we have endeavored to implant in the Lower School, of mutual helpfulness in work, and mutual interest in all forms of creative endeavor. She understood that our school is a place where we may tell each other the thoughts that come to us, and work out together our ideas.

As she talked of the future, she was one of an interested group of little ones standing in the school garden beside a wealth of golden

daffodils—their background a thriving little redwood tree which they had planted last year —and how well both children and garden symbolized the ideals of the Lower School, each growing in its natural way, all harmonized into a happy group. So we feel that this, the youngest department of the Williams Institute, is just a vivid and fragrant part of an already beautiful and fragrant garden.

Our object in this experiment was to awaken the child to consciousness of his capacity to think music, the stimulus being poetic thought. Our method of procedure was as follows:

(1) To find out what the child loves.

(2) To awaken his imagination, and if possible get him to put into a poetic phrase some thought.

(3) To ask him to sing his poetic phrase.

At first the children were given phrases for which to find melodies, but soon they began to supply their own words. They chose their subjects chiefly from out-of-doors. This was not surprising, since the life of the child is the life of growing things everywhere. And also, the open-air world is a world that gives back song for song: the twitter of birds, the pleasant commotion of water, the sibilant sighing of the winds, the drum-call of the long, dry grasses rustling in the wind.

That we might take advantage of this ready *rapport* with life-in-the-unfolding, our teacher

proposed writing an operetta or music-play. In this way we were able to bring the various groups of the school together and unite them in a single undertaking. The result was gratifying. Contributions increased in number and a higher quality marked the work of the several groups composing the class, as a result of the new integration. The story was written by the Sixth Grade and was called "A Day In The Woods." There was a general plan out of which the songs of each group came as a natural outgrowth. Enthusiasm prevailed everywhere except in the Fourth Grade, which was made up entirely of boys. These boys had said, only a short time before, that they hated music. What they hated—but this they could not know—was their conception of it. Music that meant an act of creation motivated by the group-spirit was a very different thing, and they were quick to appreciate the difference. From being stubborn objectors these boys became one of our most constructive and enthusiastic groups. They decided that we must have the elfin dance and the song of the brook, and all contributed to words or music. Unfortunately we cannot repeat here the music of any of these songs, but we venture to recall the words of *The Brook.*

Winding down the mountainside
Into the valley below
The little brooklet laughs to itself
And sings its merry tune.

Winding down o'er field and plain
Into the forest green,
The brooklet calls to the wee wood folk,
"Come, drink with me!"

From each grade came some added element of interest. The Sixth Grade suggested the life of the woods by introducing a squirrel motif and some bird songs. These made a very pretty effect of "atmosphere." The Fifth Grade contributed "The Sturdy Oak." The younger children chose flower songs, and a song about the fairies found its way into the collection. Always a thought expressed by one child inspired another child to find its beautiful form-in-words, and from still another came the melody so quickly that it was a delight as well as an inspiration to all the rest, who felt, under this quickening influence, fresh increase of power.

We gave our music-play, as befitted such a composition, out of doors. A hillside dropping into a grassy glade accommodated an audience composed of parents, teachers and friends. The early spring sun shone down on us as we moved about among the trees. Butterflies went flit-

ting in and out of the shadows, like bright muted sounds, and the small player-folk went tripping in and out like butterflies grown larger. Little green warblers and little brown thrushes were singing somewhere in the distance, and in the heart of our thrilled adult group a group of children were working the miracle of wonder as we beheld the unfolding of an idea under the impetus of collective consciousness.

Beginning Music with Solfege

Before the child learns to read for himself he learns to listen to the reading of others. Before he reproduces in speech the words spelled out for him on the printed page, he has learned the shape and signification of those words. Similarly, before he is rightly ready to undertake the delicate and exact art of singing he has need of a delicate and exact comprehension of the elements that comprise his song. He must learn first to "hear" correctly, so that he may produce, at pleasure, agreeable tones.

This "hearing" of music has long been included in the educational programs of European schools, where it is begun while the child is still at an early age, and where the value of long and patient practice is regarded as obligatory to the attainment of the desired discrimination and skill. In America, on the contrary, we have taken our musical training all too lightly, proceeding from the easy assumption that, musically, men are of two orders: those who are born that way, and those who are not. The possessors of the "natural" gift and the

unfortunate ungifted are alike spared the drilling.

Our demonstration has been conducted with small groups of children. Learning to listen, learning to produce prescribed tones, learning to read music—such have been the simple-sounding, but by no means slight accomplishments of these classes in solfege. "Hearing" together they have inevitably received heightened music-impressions; reproducing tone individually before the group, they have achieved more perfect rendition than would have been possible with no group-stimulus; and with the reading of music it has been, as with the merely oral statement of it—always the group has lifted the individual and magnified the value of his personal contribution.

Our Musician-teacher concedes that "there may be some rare individuals who are totally unmusical, but such are far more numerous than the persons who hear music intelligently without having acquired the ability by long, careful practice." In other words, that "ear for music" on which we lay so much stress and to which we devote so little education is not, save in exceptional instances, the flawless feature that we so readily take it to be. Like the

eye, it requires not only stimulation but regulation; and the process is a long one.

Nevertheless, within so short an interval as two years devoted to this method of training, we are able to mark the following benefits already accruing to the groups who had studied solfege:

Definitely musical children gained practice in sight-singing and ear-training that may be said to amount to a technique of hearing and reading music.

Some of the children found, to their surprise, that a little practice in this work brought out ability they were not aware of having.

Pupils with a poor sense of rhythm gained gradually a clear feeling for the pulse of music.

Pupils who were not interested in music as a mode of personal expression acquired at least a cultural knowledge of the elements that are essential to good music.

The occasional demonstrations of these music-groups before the assembled school were a sufficient proof of the value of the work. Listeners who were merely visitors became, vicariously, participators in the fine thrill of the fine moment. At Christmas time, the singing of some of the most precious of our ancient carols wrought the magic that removed the last linger-

ing doubt as to the validity of this method of teaching the ear to hear and the voice to utter accurately the measures of pure music.

Long ago President Eliot of Harvard University pointed out that music is one of the most stimulating educational subjects by reason of the various powers it calls into play, the eye, the brain, the imagination, the hands and feet. And as one of our own professors of music wisely adds, music also cultivates the taste and the ability to draw fine distinctions. Perhaps more than any other mode of shared expression, it conduces to that co-operative spirit which is the ultimate test of the true group.

The Dance

"What do you dance?" the African savage asked when he met a member of another tribe. The savage knew that what a man danced told his customs, his religion, in fine, the pattern upon which his life was woven. But we civilized peoples are not so wise. We treat the dance as a matter of passing fashion, and because we do not ask, "What are we dancing?" our moral pattern is in danger of being destroyed by false rhythms.

Until our American culture has evolved a rhythm of its own, we can do little in our schools to affect the general character of our national dancing. Nevertheless the dance, taken as a part of the school curriculum, offers unexcelled opportunity for developing a sense of group unity, synchronizing, as it does, the individual rhythms, while at the same time promoting self-expression. Because we realize the important part that the dance has played in social integration, and because we foresee its profound possibilities for the education of the future, we have from the first maintained classes for the study and exposition of this oldest of the arts. A report of our work over a period of ten years, together with a summary of our conclusions on the subject, follows:

I

All healthy children delight in action. Action tends inevitably toward the creation of rhythms. Whether these reiterated gestures that we make from day to day and year to year conduce to our ultimate greater good or to our undoing depends on the care with which our rhythms of body, mind and spirit, are determined from the first.

Music, beginning with the bare pulse of the drum and later elaborating its expression through a wide variety of instruments, is the inspirer of the dance. The very smallest child, hearing the notes of a piano, will begin to put some part of his body in motion rhythmically, or at least will make the attempt. He will listen consciously for the steady-falling accent that gives his body-accents something to mark time to. He will begin to sense a reason for music and for dancing, a reason that reaches back to the initial ordering of the universe. With his little body, inspired by his zealous though still undisciplined mind he will endeavor to create, inventing his own childish modes of expression.

We find no better means of securing the pupil's interest in constructive effort than to appeal to his play instinct. As soon as the thing

becomes a game, it becomes his highest pleasure. To step as spirited horses, to fly as birds, to bounce balls in time with the bounce of the piano notes, to skip, march, tip-toe—all these are pure play to the child. The teacher's care is to encourage profitable rhythms and suggest new ways of securing a completer and more graceful co-ordination between the growing body and the growing mind. We must arouse in the pupil a response to rhythmic manifestation in all its infinite variety. We must attune him, deliberately, to that universal orchestration of which the swelling sea and the winging birds and the leaf that flutters in the breeze alike are elements.

We find, with our pupils, that the expression rendered is in exact proportion to the dancer's understanding of the music prompting him, together with his ability to detect rhythm, tempo, and variations in volume of sound. Through his endeavor to sharpen his musical sense he develops alertness and power of prolonged attention. Bodily grace results from the repeated expression of his "feeling" for the music, to which we encourage him to respond, so far as possible, according to his own conception of its meaning.

After hearing the music and thinking over

its meaning, our pupils try to show this meaning forth in body-motion. This calls for recognition of one another's accomplishments, and the imitative impulse quickly comes to the fore. The children criticize and acclaim and finally adopt as a leader the pupil whose interpretation seems to them the best. A discussion prompted by the teacher brings out their reasons for the choice, and this in turn opens the way for some talk about the technique of the dance. When next the children take the floor under the leadership of their own chosen playmate, they have advanced another rung on the ladder of intelligent rhythmic expression.

By recognizing the rhythm at the heart of all created things, and then, more specifically, the rhythmic structure of music, and by adjusting bodily motions to this rhythm, and finally by interpreting the meaning back of the music, our pupils escape from the bondage of awkwardness and timidity into grace and poise. Self-consciousness gives way to self-assurance. We feel justified in believing that, as the result of our work with little children, some adults will be freer from awkwardness and readier to live life happily and healthily. Grace we regard as the natural concomitant of these other conditions.

II

Folk-dancing, being essentially simple and sincere, provides an excellent medium for childish expression. It is the dancing of bygone generations, a homely art easily comprehended by the child because, like himself, it is still unsophisticated. Moreover, in the folk-dance the older, racial rhythms are at play, and the child, sensing these rhythms, is quick to take them up and incorporate them in his own being. They are his heritage, the pattern of thought-formation into which he is born and to which his organism naturally responds.

We find this mode of dancing peculiarly adapted to school purposes. Through rhythmic co-operation the pupils achieve a social solidarity invaluable in group work. The relation of neighbor to neighbor, and of each to the whole, is the prime concern, personal excellence signifying only in that it contributes to the combined effect. To think quickly while in action; to realize that in losing one's own poise for however brief an instant one throws the entire group out of order; to learn that freedom, to be worth having, must go hand in hand with self-restraint and a careful consideration of others —these are some of the things the folk-dance teaches.

III

In the foregoing examples of our work we have stressed the action involved in the dance rather than the analysis of that action. This is in accordance with the natural development of the pupil's interest. We come now to a manner of approach that is more scientific, involving the closer analysis of cause and effect and of the exact inter-relation existing between time and space as affected by music and bodily motion. "Eurythmics" is not simply dancing. Rather it uses dancing as an application of its principles, which are the principles of pure musical rhythm. It transposes the rhythms of one art into those of another. It instructs the pupil in the art of "drawing" and producing "sculpture" in space, through the intelligent manipulation of his own body. Exercises in displacement of the bodily center of gravity, study of the law of equilibrium and its several applications, practice in heavy and light movements, slow and rapid movements and their reaction upon the nervous system, dissociation and association of movements, the harmonizing of "unrhythmic" motions with the resultant disappearance of nervous and moral deficiencies, and the balancing of rhythmic elements are important features of the work. Its purpose is to

give the child a technique with which he may perpetually educate and re-create himself.

Before we build new motor impulses into the subconscious structure of our children we must needs teach them the relations between bodily movements and the movements of sound, between muscular force and musical volume, between the beauty that results from order and the ruin that results from disorder. Out of this understanding there will come a creativeness informed by the principles of balance, harmony, and rhythm.

IV

In order to assist the student to a better understanding of himself and of the human process as a whole, Dr. Meikeljohn, in his experimental college, seeks to acquaint him with an ancient and a modern civilization. For the ancient civilization he selects that of Greece, and sets the student to studying it in its every aspect. But to know the Greek culture subjectively one must know the Greek dance.

In this civilization which in so many respects has never been surpassed, dancing was an art to which all lent themselves. It exerted a powerful influence over the other arts. It was an indispensable part of the training of a philoso-

pher. Through perfect co-ordination of body and mind he arrived at a clearer understanding of the relation of man to his immediate world and to the universe. The dance was the pattern upon which Greek philosophy was woven, upon which Greek painting based the stirring narratives depicted on urns and vases, upon which sculpture relied for much of its inspiration, and to which athletics was closely allied. The drama grew out of the dance. In the Homeric Age the heroes danced before going into battle, and to celebrate a victory. They danced in honor of the gods, and in appreciation of a feast. The shield of Achilles was circled with dancers. Music and dancing lay at the foundation of the political and military, as well as of the religious organization of the Dorian States.

Our experience in teaching American youth to dance the rhythms of ancient Greece has had noteworthy results. We attribute the poise and grace of students in these classes to the incorporation of the rhythms of this older, deeper, riper culture in their consciousness. With the practice of outward forms there has come an enrichment from a time and culture that we mistakenly regard as gone from the face of the earth. Our youth, dancing the Greek dances, link space with space through under-

standing, and bind era to era with recaptured beauty.

In the synthesis of these four methods we believe that we have achieved a system of teaching the dance which embodies the principles underlying all creative art.

An Experiment in Thinking Together

Although schools in general recognize the value of co-operative endeavor for the development of the individual, they are not making thinking one of their "school activities." The youth learns to play and to work with others, but not to think with others.

It will be said that group-thinking weakens the individual, lowering his mental processes to those of the crowd. That is what happens if the group is organized from without, or left to the chance domination of some person within. But let the group once become awakened to a conscious direction of its own development, and the individual is lifted out of his limitations to higher sweeps of thought and imagination. To test this, one of our high school groups, after careful study of Shakespeare's *Merchant of Venice,* set to work writing together the story of the plot. A member of the group made the following report at the Fireside Circle (a gathering of parents and pupils, Friday evenings):

"To the end that each might discover the particular contribution that he could make as an individual, we first wrote separate papers, having previously determined upon a plan. That done, we sought to preserve those qualities in each paper which we thought good by combining the best paragraphs, but, contrary to our expectations, those paragraphs did not fit well together. We then abandoned our individual efforts and tried to create,

spontaneously, a group paper. This proved to be altogether too general; in fact, it might have represented any one of the Shakespearean plays. Realizing that we must retain individual characteristics, we devised the plan of writing our several introductions on the blackboard, and cancelling redundant phrases. Through this process of working, at once analytic and synthetic, we received an impetus which added thoughts and qualities not in any individual paper. In contrast to the introduction thus obtained our individual efforts lacked vitality. From that point on, the paper seemed to be a conscious thing, choosing its own form of growth and rejecting much that, as individuals, we had thought important."

An interesting discussion followed, the parents asking questions which the pupils of the group answered as follows:

Question: How did you happen upon the plan used?

Answer: That came as an inspiration to one of our members after we had discussed the matter in class, and, interesting to know, this member had previously maintained that the only way to tell the story was as Charles Lamb tells it, scene by scene.

Question: Did the thought of any one pupil predominate?

Answer: Only in the superior power of some to work with the group, and to hold its thought in unity.

Question: Do you like to work thus together?

Answer: Yes, for the reason that the interest is much more vital.

Question: What have you gained as individuals from working this way, over and above the usual class-method?

Answer: We feel that we have discovered a method of self-measurement; that we are now able to be our own critics. But of most value, we have learned that everyone has something unique to offer.

Question: How large a group could think thus together?

Answer: That would depend upon the amount of practice, and the ability of the members to integrate.

Question: What will happen when the individual finds himself away from his group?

Answer: "He will make a group!" (triumphantly from half the class).

Question: Does such group-work as this, then psychically endow the individual with that power?

Answer: Those of our school who have gone out into the world are finding that to be the case.

In listening to these young people radiant with the joy of thinking, one fell to wondering if there might not, indeed, be a passion of thought—a passion transcending even that of love. Both Dante and Lucretius thought so, and what a picture is that which Milton draws of a whole nation inspired by such a passion: "With hearts more capacious, thoughts more erect to the search and expectation of greatest and exactest things"!

We have attempted to show in the foregoing records of our work how, in every endeavor, there is present as an animating and re-creating force that higher power we call the spirit of the group. Throughout the years this spirit is, if our philosophy prevail, the guiding and uplifting power in the development of the child. From his home-group he comes to us to enter into group-relation with children of his own age, who comprise his class in the school, and later with the school as a whole. The school, in the immediate sense, consists of two groups: teachers and pupils. In a larger sense it includes the graduates of the school and the parents. And besides all these there are the friends of individuals and of the school as a whole, and, finally, the friends of the group-idea.

Once in every year these groups mingle for an hour. There is a brief, enriching fusion of faith and hope, a sudden clarity of understanding. Then the moment passes, of necessity; the participators in the simple but vivid scene disband to go their several ways; the place is silent. But, as in Browning's memorable line, the place is also "aware." It has worn a glory on its brow. It has recapitulated, in this swift,

poignant interval when children of all ages, with their teachers and their parents and their friends, were gathered together in the noble atrium, those other moments that have come and gone and left behind them, as their inestimable gift, the sense of accomplishment and insight; and already it looks forward confidently to moments yet to come that shall be signalized by the same sure spiritual flash.

Our Commencement is simple. We have a little ceremony which, with the years, has grown into a kind of ritual. Because the entire school participates in this ceremony, it has had to be short. For the same reason it is flexible and colorful, compact of meaning and yet easy to understand; a form of procedure that meets the need of all and pleases all.

We base our ceremony on the old Arthurian legend of the Round Table. It will be remembered that the Round Table was made by one Merlin, to whom was ascribed all power for good and for evil, and that it symbolized the roundness of the earth. Also, King Arthur said of the table and its noble knights, "These please me more than right great riches." And when he was asked how men might know them that should best do, he replied that such an one sur-

passes others "as the lion passeth the leopard, both of strength and hardiness."

This table, then, we adopt for the symbol of unity through the group. The miraculous power for good and evil persists in the exalted power of the group entity which, in the last analysis, presides over every band of adventurers. And we take it for a deeper enrichment of our own adventure that this symbolic Table Round and its attendant knights was antedated by still other symbols of its kind, that echo far back into the early-morning hills and valleys of irrecoverable myth. A psychic quality, not of the moment only, but of time behind time, seems to inhere in this story and to be available to those who, in true faith, undertake its evocation in another time and manner.

At the sound of music our graduating students, preceded by two small standard-bearers, enter the atrium and ascend the wide central stairway to the landing, where, seated against a circular window darkened with red velvet curtains, they make, in their soft, silver-gray robes, a charming and dignified ensemble, the little pages standing, one at the right, one at the left of them, attentive to their picturesque responsibility. On the floor below, and filling

the commodious balcony above, are the visitors and the student body.

When the music ceases the Principal ascends midway on the stairs and, after making a short address in which she touches briefly on the central purpose of the school, explains in a few words the meaning and derivation of the ceremony to follow. She then summons the Squires of the Round Table "to buckle on to our Knights such virtues and qualities as will preserve them against harm." The summons brings its first response from a representative of the youngest group in the school, who, attended by his comrades, comes forward, takes a few steps up toward the graduating class, and in sweet, childishly modulated tones pronounces these words:

"Right Worshipful Knights: We bring you the full rarest gift that we can find, which is the love of nature. Through its grace may you take pleasure in the birds of the air and the flowers of the field, and in the great open spaces of the earth."

The next grade follows and the next, the gifts becoming more imposing, but no more precious, as the age of the givers increases.

"Oh Noble Knights, long proved of us, we would give you beauty in the inward soul. In its light the most insignificant thing will become to you a symbol of a deeper truth and you will rise to a higher dimension of knowledge and understanding."

This is the message of the Tenth Grade. Courage, the desire for service, understanding of the laws of life—such are the virtues and qualities with which our graduates are invested, and which we believe are worth more to them than "right great riches."

A gift of like nature, but based, now, on personal experience of the outside world, is made by an alumnus. Then a teacher speaks on behalf of the faculty. A parent presents a gift wrought out of parent-wisdom and parent-hope. And in conclusion a spokesman of the graduating class rises and responds to all these givers of good and perfect gifts. Then the diplomas are conferred; the proud knights march down the crimson stairs, boy and girl side by side, to the accompaniment of some suitable recessional; and a moment later the house is flooded with talk and laughter and flowers.

There are tears, too. When the very small child mounts the stairs and offers his exquisite gift—when one looks from the mature speaker pronouncing his encouraging, inspiring words, to the grave young faces seated in the semicircle, listening—when the peculiarly lovely simplicity of the moment sends that thrill through the body communicating with the soul

—not only mothers and fathers, mere friends and even merely friendly lookers-on are moved by the magic and the beauty.

It is good to have come and seen and been lifted for an hour to a higher level; to have felt spirit touch spirit; to have known, through this simple yet profound ceremony, the possibility of a day when all individuals shall transcend themselves—through the group.

John is a good boy. Henry is a good boy. But what sort of a boy is John-Henry? That is a question parents would do well to ask. For this composite boy is likely to be of a low type, especially if many boys enter into his making; and he will have much influence in the forming of their sons' minds and characters.

It is a generally recognized fact that whenever a group of men come together for a common purpose, a crowd mind is created. Boys are "but men of lesser growth," and inasmuch as their individuality is not yet established, are all the more subject to collective impulses. The massing of children in schools tends to induce the collective mind and creates in the child the habit of letting the crowd think for him—a habit which may follow him through life.

The classroom is an excellent laboratory for the mysterious, and as yet little understood, processes of this psychic chemistry. Each pupil brings to it many diverse and unknown elements for the making of thought-compounds.

Also, the regime of the classroom is well calculated to further this mental fusion. In our schools the Black Art finds a new karma. Strange magic inheres in their brew of nations and heredities. Into this crucible we throw our children—a melting-pot in very sooth! Like the alchemists of the Middle Ages, we seek to transmute base metals into gold and silver. That were well if only base metals went into the crucible, but what of the precious ones? Have we not to expect an alloy in return?

If our children are to grow in perfect social consciousness, we must begin with small groups. Our schools are deadening for the reason that their numbers are prohibitive of personal relationship, of that fine consideration essential to the growing of souls. Difficult as it is to hold the attention of pupils, still more so is it to evoke their spirit. For that is needed the art of human direction as opposed to mechanical direction. The self-respect of all must be maintained. There must be no sense of hurry. Time is an important factor in the growing of souls. Courtesy and consideration are dependent thereon, and however slow the pupil, he must not be allowed to feel stupid, nor to fall out of the game.

The child has to do his own growing; no one else can do it for him. For self-realization there must be self-expression. And the self-expression, like the growth it fosters, must be harmonious and many-sided. Vitally important is it that all the expansive instincts have a place in this process of development.

As the cell has its relation to the body through a complex system of tissues and organs, so the child realizes his larger selfhood through an ascending series of loyalties—home, school, state, nation. Freedom means the right to grow, to be an organic part of the great whole of life. The university student who defined the state as a matter of "social contact" answered better than he knew. Happy the individual whose growth in citizenship is started in infancy, and continued through the formative years, for his group will come to embrace the state, ay, the universe!

We have more than to impart the knowledge of the organic unity of mankind. The individual must not only *know* that he is part of a larger life; he must *feel* himself part of that life. The

giving of the knowledge is a simple matter, but nothing short of a complete revolution in our concept of education will, I venture to say, bring about the feeling.

There exist in every child powers which, if fully developed, would make him at one with the Infinite Whole of Life. It is the circumscribed soul that stands in need of boundaries. Give the youth a "conscious impetuosity toward the divine realities" and you have started him on the road to world-citizenship. Over-weening though his loyalty be for school or country, the smaller loyalty is quickly taken up in the larger, once the mind has been given this powerful upward start. There is no limit to the projecting, idealizing force of the child; the limit is in our short-sighted vision that would stop his education with the intellect.

We are thinking beings, and hence we must learn to think together. Because we have not done so, the world is becoming dominated by the crowd-mind. It is the function of small groups to find the true principles of thought association. The group thought is more than

the sum of our individual thoughts. It is a co-operation of those thoughts. We must come together for the purpose of creating something new. Speech and song had their origin in the concerted effort of men toiling and rejoicing together. Yet more wondrous things will come out of our thinking together.

To hold a class in creative synthesis requires a higher power, a deeper insight, on the part of the teacher than does the hearing of a recitation. She must be mentally aware of all her pupils. We marvel at the ability of a chess-player to hold in mind the moves and to play blindfolded a number of games simultaneously, but far greater the skill of the teacher who really teaches. And we are asking of her a physical impossibility when we expect her to teach class after class the long day through. In my own experience as teacher of high school mathematics two classes a day was the extent of my power to do truly creative teaching; after that, put forth my spirit as I might, my work became more or less mechanical. What is most significant, practically all of my pupils (covering a period of seven years and hundreds of

students) who have risen to eminence belonged to those first two geometry classes.

A group of persons with whom one enters into conscious social relations is a biological necessity. While the physical man may exist apart from his fellows, the psychical man is dependent upon them for the very air he breathes. The person who lives by himself becomes "queer." The isolated tribe fails to evolve for lack of communication with other tribal entities. The nation that aspires to be a supernation loses all moral sense. A world of equals is essential to self-determination on every plane of being.

We do not begin to have the help of the subconscious mind that we might have, not only for the establishing of habits that would relieve us of much taking thought, but in the acquisition of knowledge and the solving of problems. Experiments have been made which show that after a period of rest, there is an increase in skill and proficiency over that which the pupil possessed at the completion of the regular work. This means that the subconscious mind has

been at work. All that it asks is time. But that is just what we do not give it in our present anxiety for quick results. "God, unable to make the world eternal, gave it Time, a moving image of eternity," said Plato.

Education as it is written in the minds of our boys and girls spells inhibition. Indeed, our child-culture is one great negation, an "Eternal No" from start to finish. "Don't do this!" "Don't do that!" we continue to cry until the child has lost all desire to do. Nor is this inhibition of natural growth confined to the lower schools. The whole system of education is deadening, in that it requires a person to know all that has been done in a given subject before he may do original work therein.

Spontaneity of thought, freshness of concept, are fundamental to all creating. And those are at their height when the interest is first aroused, while the dew is yet on the grass, not after a person has labored through the long morn in a grain-field, however golden. It is to be noted that a new science springs forth with leaps and bounds, as witness the science of electricity. There is no inhibitory mass of concepts to restrain the mind that catches its wireless call.

And is it not true that the inspiration coming from the knowledge of others' achievement is frequently offset by the sense of one's own littleness in comparison therewith? The Greeks achieved the great things they did because they did not have to labor, as ourselves, in the shadow of a mighty past, but could work joyously in the open sunshine of their own blue skies. They knew themselves gods with a world in the making.

"A very stupid world," one exclaims, "were all to think alike!" Not if we were to match our world-thought with the thought of other planets, or join the hosts of heaven in some high emprise. But it is by no means conditional to our thinking together that we think alike; quite the contrary. Integration, whatever its basis, makes possible a greater diversity than could possibly exist without it. For example, the cells entering into the structure of our organism have attained a far higher specialization (individualization) than they could ever have achieved as protozoa. Mental facts have the power to function both singly and together, at once; likewise our minds are co-conscious with

one another in the super-intelligence of the group.

Since man is differentiated from his fellows through his thinking, he must needs become integrated with them through his thinking. Mr. Wells believes it is possible to bring about world-unity through common historical ideas,* but the need is for the practice of a better biology. Humanity cannot come to a perception of its oneness until it has learned to think together. On no other basis can a world league be established. Politic and economic arbitraments serve as scaffolding only to the building of that ultimate spiritual structure, "the divine event toward which all creation moves"—"far off" only because our involution has not kept pace with our evolution.

For many among us, the home is the one temple an iconoclastic age has left standing, and that is in danger of becoming an empty shrine. The law of Athens made it the duty of the first magistrate to see that no family became extinct. The conservation of the family is not less a matter of national import today. And fundamental to the family is the home.

**Outline of History,* H. G. Wells.

The Hindu would maintain the family for the sake of his religion, the Japanese that he might have descendants to worship him, other peoples for the entailing of property; but in our land the family is desired primarily for the group life that centers therein.

. . . to stimulate in children the love of mental adventure, to reveal to them the vast realms of thought beyond the confines of the text-book, the kingdoms of shining splendor not mentioned in the curriculum. Every boy is a potential Columbus, and every subject an unexplored realm, but there are many to warn of the dangers, and few to pledge their jewels for the venture.

While other creatures were able to advance upon the evolutionary road through a survival of the fittest, progress for man is made only through the creation of the fittest. Our examination systems and psychological tests have for their end the survival of the fittest. The deduction is that we are educating animals.

How to raise life to a higher level is the problem confronting education today. And strange

though it may seem, it is to primitive life-forms that we have to look when planning our general course as creators of the larger life to come. There, among lowly types, are organisms which have achieved their involution—accomplished their destiny; while man, although he has come much farther, has a long road yet to travel. Illuminating as education has found history to be, it will find biology immensely more so.

Man, so read the books on ethics, is distinguished from all other animals by the fact that he is a moral being. One is impelled to ask, "What of the bees and ants, whose social structures rival our own?" There is doubtless much that we could learn from those tiny creatures as to self-abnegation and orderly functioning for the good of the whole; and do not these qualities constitute the very essence of morality? Man is a moral being not because he is a man, but because he is a component unit of an organic social structure, even as the ant and the bee, and as the coral insect before them, and as the cell, before all. While "ought" is, as Darwin says, the most important word in man's vocabulary, it by no means originated with man. To all intents and purposes the polyp was governed by the same great moral aspirations as ourselves, and likewise every creature

since the beginning of life that has sought to create beyond itself to a greater entity.

To make education creative in the true sense of the word, we have to observe the laws of biological development. The way of growth is from the small to the large; upward, not downward. Our present school system inverts that process, placing, as it does, the college requirement above all else. The college should not have requirements. It is the living, growing minds of our children that have requirements, and the office of the college should be to meet them. Let the universities and the upper schools shed their light upon the lower schools, and, if that light is sufficiently life-giving, those will grow toward them. Our practice of fitting minds to curriculums is the psychic analogue of that practice in early England, of which Victor Hugo writes with such horror, when men grew children in bottles for the purpose of making mountebanks. Could we visualize the minds of our pupils we should find, I fear, distortions quite as sad.

Education is more than a science; it is an art, and the greatest of all arts—the art of creating souls. As there is in every block of marble

a beautiful statue awaiting the hand of the sculptor, so there exists in every child a beautiful soul if we but know how to evoke it. In the most profound sense the philosophy of art and the philosophy of life are one.

To fulfill our duty to the child we must see that he has the proper technique for expressing the beauty inherent in his soul. The difference between a great man and a little one is that the great man has found how to express himself, and the other is still longing to do so. Gray's "mute, inglorious Milton" was inglorious because he was mute.

Education should seek to give activity to all the faculties wherewith the child is endowed. Its aim should be to produce a man who can say with Emerson:

> I am the owner of the Sphere,
> Of the seven stars and the solar year,
> Of Caesar's hand and Plato's brain,
> Of Lord Christ's heart and Shakespeare's strain.

How surprising the strength of young, growing things—the tender blades of grass piercing the hardened earth-crust, the sprouting tree cleaving the great rock, the youthful mind breaking through the layer of conventional thought into the sunshine of new beauty and truth.

PART IV

THE INFORMING SPIRIT

As a group thinketh in its heart, so is it.

A Typical Talk to Students

We have assembled for a very special occasion. One of our number, one whom we very much love and respect, is going away. Now it is customary in colleges and universities for professors to honor a departing colleague by writing and dedicating to him a volume of essays. I wish that we might do this for our student-colleague, but since we have not time to get together a book, we are going to dedicate to him this morning's talk.

It is to be about counting. I want to show you how important a part counting has in your lives. Do you know that the first real act of reasoning that you did after being born into this world was when you said: "One, two"? The child who cannot count can never learn to think. The parents are always happy and proud when the baby begins to count, for then they are certain that it has a mind.

Do you remember the pleasure you had when children in seeing how far you could count, and how you were always wondering what was the

biggest number? Your mind was testing itself, trying its strength, just as your legs tried theirs by running as fast and as far as they could. That is the way minds and legs grow. Now you are not going to keep on running forever; no more are you going to keep on counting forever; but you want to be able to go as far as you choose.

Some savages cannot count beyond ten. In South America tribes were found that could count only to five. All numbers beyond they called "many." Five was the limit of their number series, and also of their thinking. So you see how important it is, if your mind is to grow and you are to be a real person in the world, that you have the power to count.

"Oh," you say, "we can count up to billions and trillions!" Certainly you can, but there is a larger kind of counting, a counting that does not stop with the finite range of numbers, but goes on and on. Think of the biggest number you can, and it goes beyond that. Think of the smallest number you can, and it goes below that. This kind of counting you will find in calculus. The progressions of calculus are infinite. The lengths of curves and the areas of figures are computed by calculus,* but calcu-

*Blackboard illustrations were given.

lus is not limited to engineering problems. It has a greater significance for life. You have seen how its numbers flow into one another. "Fluxions," Newton called them. The counting of calculus differs from other counting in that it has to do with continuous quantity. By that I mean there is no break from one value to the next. Time and motion are instances of such continuous progressions. So, also, are your mental habits. Let us see what sort of progressions you are setting up there.

We will begin with the truth-series. Does a little lie slip in occasionally? Then you are not getting started right with the infinitesimals, and your truth-counting is not a continuous quantity, flowing from one truth to another one, but is broken up by uncertainties.

Another important series: If you begin in youth by making vulgar remarks and getting into little groups and telling off-color stories, what is going to be the result of that? Surely not the clean-minded man or woman that you want to be.

Then there is the matching of pennies. To what does that lead? It won't do to say that you will stop with pennies, for these habit-series have a way of going on and on. It is the same with smoking and drinking, and other in-

jurious habits. They keep on getting stronger and stronger, bigger and bigger.

We have seen how the mind loves to count; also that it is limited by having to stop short at any particular point. Hence every series in your whole life should be a series that can safely go on. Then we need have no concern for the outcome. With each progression that you set up, your lives will expand in service and in knowledge and in beauty. That, Dear Pupils, is what I mean by learning to count.

Letters to Seniors

I

The time has come when you should be thinking of the pattern, or configuration, that you want your life to take. I do not mean that you are to determine the events that the future will bring. What I am asking you to do is to determine the general plan into which you would like those events to fit.

This problem of configuration is not peculiar to boys and girls. It is a problem universal to all life. Indeed, to be organic is to have a plan of action, to be in the way of attaining a life-history. It has just been discovered that even the atom has a plan. What, then, is the configuration that you would choose for your life pattern?

I know that you will answer, "The spiral." But I don't want you to do so, merely because that is the symbol of our school. I want you to choose the spiral for your life-pattern with full knowledge of all that it signifies.

The spiral is more than a mathematical abstraction. You have only to look about you to see the many concrete uses that it serves: there, a protective covering for shell creatures; here, giving strength to the horn; now projecting

forth the seed; and always the ladder by which God's creatures climb heavenward. This beautiful curve is alike the road of evolution and of individual aspiration.

That the spiral is everywhere the law of growth is because it embodies certain great life principles. The first of these is the identity of pattern that it maintains from one loop to the next. This identity of pattern has been found essential to an enduring organism and, also, to an enduring character. Then there is the fine balance between freedom and restraint at its every point, a balance which must be observed for true art and for true living. And finally the concentration which makes possible the rise from one level to the next. There is much that I would like to say in that connection about the overcoming of self, the growing of an increasing purpose and consecration to an ideal, but I have space only for a few injunctions as to the form of this spiral which is to constitute your life-configuration.

You will want to draw your base circle sufficiently large for the completed figure to include all of your interests. Until now these have been mostly separate little spirals which have come and gone after the manner of the dust spirals that scurry down the road on a hot day.

To guard against toppling, you will want to erect the axis of your spiral at the center of its base. As to the rise from one loop to the next, that depends entirely upon your strength of will and determination. Remember that you cannot go far on a flat spiral any more than you can on a flat tire. One final word of warning: be careful that your spiral does not at any time become inverted, for all in a moment it would turn into a vortex drawing you down.

I haven't said anything about the apex, the Ideal toward which you are aiming, for I am hoping that that will recede as you climb so that your spiral will prove, Dear Pupils, not only a configuration for your Earth-life, but for your Eternal-life as well.

II

Before you leave us I should like to record for your remembrance some of the discoveries we made together about that elusive thing called personality. You will remember that when we first discussed the subject the majority of us were of the opinion that personality was inherited along with one's physical characteristics and mental aptitudes. But now we know that our personalities are of our own making.

Our first study was to examine the native energies at an individual's command—the various and complex tendencies and desires that emerge from the subconscious self. We charted these sources of action as so many divergent lines of force. The next step was to find how to co-ordinate these divergent forces, and at the same time conserve the maximum amount of energy. It was evident that to repress any spontaneous creative urge would lessen by so much the strength of the personality. On the other hand, to allow a free expansion of energies would be as destructive as to explode a quantity of gunpowder. We concluded that with personality, as with physics, for the resultant to be effective, the forces must be directed toward a definite goal.

One morning was profitably spent in the parallelogramming of forces. It was clear that if some contra-interest was turning a student's attention away from the task in hand, he had to set his sails of purpose in such wise as to overcome the deflection. Also, through our knowledge of physics, we found that the higher the goal, the more possible it was to bring potential functions into play and to unify the whole of one's personality. This led to a quest for ultimate goals. The proximate and sec-

ondary aims which had before figured large in our consideration of goals, gave place to ends of value in themselves, and soon we were committed to the belief that character and personality are the big aims of life.

At this point we were suddenly aware that something was happening to us. We felt the emergence of a new quality of consciousness in the school. The way in which the daily events ran their course was different in virtue of its presence. There was not only a finer spirit in the meeting of situations and issues; there was also a finer judgment. As individuals we were doing better thinking, seeing things in larger relations. Our concentration and unity of purpose had lifted us to a higher plane of mentality. So much for our venture into the Fourth Dimension.

"Fourth Dimension!" you exclaim.

Yes, I mean just that. To ascend to a new level do we not need to move in a direction at right angles to the one on which we are now standing? As with mountains, so with mental and spiritual heights. All progress requires freedom of motion, and in the concept of higher dimensions is to be found the greatest freedom yet won by the human spirit. Now you know why I have so persistently referred to the

Fourth Dimension. I wanted to free your minds and souls for their highest development.

III

You have asked me to tell you just exactly what constitutes a group. You say you know how it feels to belong to one, but that you find it difficult to put the feeling into words so others understand.

Suppose we look first to the common use of the term. As spoken on the street and in the counting house, the word "group" seems to mean merely a number of persons or objects. But every word has an implicit meaning as well as an explicit one, and I think, if you look closely, you will almost always find back of the word "group" an implication of unity.

The segregation of the elements is usually based on the recognition of some common characteristic of relationship, and because of this thing that they have in common, the members are regarded as constituting a unit. For instance, we speak of a group of strata in geology; a group of atoms in chemistry; a group of animals or plants in biology; with the understanding that there is a natural relationship obtaining among the elements thus brought together.

In art we find a still further meaning implied. There, group is defined as two or more figures forming a design or taken as a distinctive unit in a more complicated design.

"Ah! Now we are getting warm," you say. Yes, we are coming nearer the larger meaning we seek—the group as a creative element in the life-process.

But to get the group-property clearly defined we must turn to mathematics. There the law of combination plays quite as important a part as the elements themselves. A class of things operated upon by a certain rule or law possesses the group-property if the result of combining any two of its members is itself a member—a thing in the system, not out of it. To illustrate: the system of whole numbers with the familiar rule of addition is a group, since any two integers when added give an integer. But the same class of whole numbers with the rule of division does not constitute a group, for manifestly fractions would result from certain combinations. So you see how very necessary it is for us to know what the combining principle is in any collectivity.

We are prepared now to apply the group test to life. How about sensation? Does it hold there? Take the sensations of color. By

combining them do we get sensations of color? Yes, if we include white and black. Color, then, may be said to constitute a group. So, too, does sound, provided we include silence, and have ears to hear the complete gamut of sound vibrations.

Now I am going to ask you a surprising question. Is your mind a group? How will you go to work to find out?

"The elements are ideas," you answer, "and thinking is the process whereby they are combined."

Good! Now comes the vital question. Are you able to combine the ideas that you possess so as to make another idea? If you can always grasp that resulting idea your mind is a group. But unfortunately most of our minds sooner or later reach a limit in this process of adding idea to idea.

This, in my opinion, is the real test for mental rating and the only test that gives place to character and purpose. It is a test that is not confined to time or place. You are giving it to yourself constantly. Frequently I have watched you push the thinking process onward, and I am glad to say that I have never found you unwilling to go further.

Now we are ready for the question, When is

a group of persons a group in the true sense? I am sure you will reply:

"When it is creative of more of that thing for which it is assembled."

Is it not evident, then, that we should always know in what name we are gathered? Are we met in the name of thought, then new thought should result; of service, then higher service. And so for all the forces pulling men together. For a true group relationship, it is vitally necessary that the individuals know the law of combination and hold to it. This is the principle underlying all loyalty.

There is much more that I would like to say, but my letter grows long. So I will close with the hope:

"That you now to other comrades, and these again to others,
Over the whole world may bear the glad covenant perfected—finished—

. . . . .

Thus to realize the indissoluble compact, to reveal the form of humanity."

Radioing to Mars*

What shall be our first message to Mars? Dr. Michael Pupin, the retiring president of the American Association for the Advancement

*Written for a Teachers' Journal.

of Science, says that the planets are trying to get into communication with us; that the static in our receiving sets is caused by the interference of cosmic waves.

"The next twenty-five years," he says, "will not merely see men speaking to men all over the world. The earth itself and the sun, that great center of all our terrestrial energy which means all our life, will be speaking to men by means of electrical communications, and men will understand the messages.

"I, myself, have watched on my instruments the arrival of these cosmic messages. The earth currents in trans-Atlantic cables and the fading of radio messages rise and fall very slowly, taking hours to complete a cycle. It is like watching the deliberate and irresistible breathing of a cosmic giant. I can only guess relations between the sun and earth. But where I can only speculate today, the next generation will know."

We have not only to prepare our children to meet the conditions of an ever-changing terrestrial environment, but of a celestial one as well. Twenty-five years is a short time to bring about this enlargement in the scope of our education. It will require quite a new pedagogy, I fancy. One that will take much stretching of

the mind. Someone has said that, although we have learned to get along without knowledge, we have yet to learn to get along with it. And therein lies the greatest menace to our civilization. Unassimilated knowledge is quite as poisonous to mental and spiritual health as unassimilated food to physical health. The recent discoveries of science have already brought us more knowledge than we are able to digest properly. With this new increase that Dr. Pupin predicts, our only hope is to raise our thinking to a higher power.

Last week I put the question, "What shall we send for our first interplanetary message?" to a group of fifty young people ranging in age from ten years to eighteen. I read them Dr. Pupin's prophecy and asked each to write a "space-gram" not to exceed ten words. They were to give the matter careful consideration, and not to hurry. The problem became a surprisingly real thing to those boys and girls; the subject of group-conference and dinner-table discussion. The younger pupils felt the thrill of a great mental adventure; the older, the responsibility of advancing science. Carefully did they weigh the worth and carrying power of messages. For all were agreed that it would require a big truth to bridge the chasm

between worlds, that nothing local to the Earth could get across.

"Moreover," they said, "these beings will not understand our language, so we must make our thought as clear and universal as possible."

The mere possibility of contacting something unknown out yonder in space had the effect of inducing a wonderful unity of consciousness. There was the same thrill of adventure that young people had in those years of world exploration when Cortez and Drake and the other discoverers were finding new lands and new peoples.

What eager expectancy there was each morning when I read the answer that I had received to the messages sent out the previous evening! An observer would have thought it all real. The first question that went whirling through the ether to our neighbor, Mars, was:

"Do two and two make four on your planet?"

We devised the plan of sending it in this wise: click, click, pause, click, click, a longer pause, then four clicks. We thought any sort of intelligence would understand that. The answer came, two clicks followed quickly by one; then after a pause three clicks. We thought the Martians very far-sighted, for had they re-

peated our statement, we could not have been certain that it was not an echo.

The next message to flash across the heavens from our mental radio was:

"How many dimensions has your space?"

A number of our older pupils who had become deeply interested in the Einstein theory, thought this a vitally important question. They reasoned that if we could find a world where space had either more or less than three dimensions we would know that there is an evolution of dimensions and that some time we might come to possess a four-dimensional consciousness.

"Five," came clearly, as they had expected, and with it big, joyous vibrations that we translated to read:

> "March on, symbolic host! with step sublime,
> Up to the flaming bounds of Space and Time."

Our youngest, who has a keen sense of humor, asked, "How many legs, arms, eyes and other accessories have you?" To this we received no answer. Some of the students, who had followed Dr. Bhose's discoveries, suggested that the Martians might have evolved from flowers instead of animals, and so of course would not be able to envisage our anatomy.

I feel sure that Dr. Pupin would like Har-

riet's radiogram. This twelve-year-old girl thought that the occasion called for a similar greeting to the first sent over the Atlantic cable, which was: "Behold what God hath wrought!" She chose this: "Night unto night showeth knowledge; world unto world uttereth speech."

We closed our broadcasting by sending to the Sun this petition of the Hindu:

"Unveil to us, we pray, the face of the true spiritual sun, now hidden by a veil of golden light."

I wonder if I have "got over" my message; if I have succeeded in projecting to lovers of children a little of my vision for education. It is my belief that, by lifting the group to a higher level of consciousness, we can free its components from the limitations of intelligence quotients. It is the purpose of my demonstration school (the Williams Institute) to substantiate this belief. And it is doing so. Every day individual children surprise us. We see new qualities and powers emerge as they combine in unity of mind and spirit for the discussion of a lesson or the working out of their community government.

If these children can be exalted and transformed, why not all children?

What Pedagogy Has to Learn from the Mother

In view of the high place accorded to the mother in the creative scheme, Education would do well to sit at her feet. True, her methods will not bear analysis, but is it not characteristic of the growing process to baffle description? And that her discipline frequently miscarries is neither here nor there. Consider what a mother accomplishes in the first six years of a child's life. In that time the infant learns to adapt himself to an entirely new environment, to respond with interest and joy to his world of persons and objects; to speak, and frequently to read, a quite foreign language, albeit his mother-tongue. The mother succeeds also in giving him more actual knowledge than he acquires in any other equal period of his school-life, college not excepted, and that without the help of apperceptive ideas, or even the ordinary tools of learning. The impress she makes upon his character no after-training is able to efface, and, most significant of all, the years of her discipline are happy years. You will say that those years are formative years and the results but natural. I say that all the years of life would be formative years if our

instruction were kept natural. The problem of education is to find how to continue the process of mental and spiritual gestation begun by the mother; how to carry over into the school the elements which have made for the growth of the child during those pre-school years in the home.

We have to note first that the child's home-group is small, rarely more than seven or eight persons. Yet we expect the little mind to flourish when transplanted suddenly to a group several times as large. What wonder that it frequently shrivels and takes to itself all sorts of fears and inhibitions! When we move a garden plant we are careful to see that the conditions under which it was growing are maintained; we should not do less for the human plant. The school-group should be kept small, not because the individual child will receive more instruction, but because his mind will have better opportunity to function. Association, in the schoolroom or out, is creative of a larger consciousness for the individual only if he is able to project his thought forth to the group and to think with it. When the group is too large for him to do so, he becomes dominated by its over-mind. The first essential of a creative school-

group is that the individual participate in the consciousness of the whole.

We have also to take account of the fact that the child, up to the time he goes to school, has functioned in one group only, and that a comparatively constant one. Although it is desirable that the growing mind should contact several groups, this should come by degrees. There is danger that the socialization of the child may get ahead of his development in those things that make him an individual. His bashfulness is designed to protect him against this very evil, and should not be overcome too soon. We older people find it difficult to harmonize our many group loyalties; how much more difficult must it be for children without our knowledge of relative values? The discordance that we see in many a little face is due to this very lack of an inner unifying principle. If we could only learn that time is an essential factor in the growing process, and cease to hurry!

Another characteristic of the home-group, when true to type, is that it is composed of persons of different ages. The psychic gamut, for the child, of the minds of father, mother, brothers and sisters has doubtless much to do in determining the scope and quality of his mind. That so many able men have come out

of the ungraded country school may be due to the very fact that it is not graded. The careful classifying of children according to age and ability in our schools has grave dangers for the individual as well as for the state. The mind is not trained to reach up or down, only laterally, to those on the same thought level. This horizontal grouping is largely accountable, I believe, for the increasing lack of sympathy and understanding between parents and children.

We have now to consider the training that the mother gives the babe. In the first place, she takes it for granted that its growth will come from within, and that that will be in the right direction, provided the conditions are kept favorable; she has no concern for the results. Guided and stimulated, she knows her little pupil must be, but free withal to grow according to the law of its nature. She leaves it to exercise its own limbs, its own faculties, to set for itself its tasks. Her effort is to evoke faculty, to foster the growth of the little mind, not to impart knowledge for itself. There is no aridity of subject matter in her curriculum, for her pupil puts into immediate practice what he learns. The end of her instruction is self-

expression. And that, I take it, is the aim of all instruction.

As to the things the mother teaches her pupils: these differ radically from the things he is set to learn in school, for they have not to do with the past, but reach out to the future. What ancestor-worship is ours! Consider the years of growth that we give up to the memorizing of the past! True, each new generation has to build on what has gone before, but the point I would make is that it will so build in obedience to natural impulses, even as the coral takes up the work of the reef where it finds that work, pausing only to discover the general trend of the life-principle to grow accordingly. And is not that what our thought-life is—a growing in the direction of truth? For this we have not to know on just what rock the reef is grounded, nor the many ramifications of our particular branch, but only to put forth our buds with all the beauty inherent in our natures. The old education regarded man as the creature of the past; the new will look upon him as the creator of the future.

So much for the three-dimensional aspect of this mother-pedagogy. We have now to look to its fourth-dimensional aspects. I use this new way of extension for those forces that lift the

individual out of himself. We are not able to measure them, but we know that they exist because of their effects.

First is the element of expectancy with which she surrounds the child from its very inception. We are just beginning to know the creative potency that the sympathetic eye has for the artist, the appreciative ear for the musician, but the potency that the expectant mind has for life is beyond our power to estimate, so far does it reach into the unknown. And still more potent is love in its highest manifestation as a constructive, upbuilding force.

We have few great men because we are wanting in sympathy and understanding. Genius fructifies only if believed in. The man requires the same constructive faith and love as does the child, for souls never grow up. The mother does more than give the boy ideals; she holds them for him. The life-process is a synthesis, a putting together, not a pulling apart.

So I might go on indefinitely finding other dimensions to this projecting forth of the mother's spirit through the child. And it is this God-given office of growing your child's soul that you mothers would turn over to the school! Is it strange that you are disappointed with the results? You expect the teacher to do for forty

or fifty children what you have done for one. Would I have you keep your child at home? No, but I would awaken you to the fact that his real education goes on in the home; that the family, not the school, is the true biologic unit of the social organism. Whatever creative impulse the child has toward life comes from that.

Read and think with your children; walk and talk with them; re-educate yourself in educating them. Have them tell you the things they have learned at school—there is no fact so dead but that it can be brought to life. And above all, take the school constructively, for its value to the child depends upon how he is giving of his spirit to it. Whatever its defects, those cannot begin to hurt him as would a critical attitude on your part toward the school. Marcus Aurelius said that he was surrounded all his life by beautiful persons. We need to know nothing more about Marcus Aurelius' character than those few words tell us. To be able to see beauty in one's fellow-beings, to enter into harmonious relations with them, to be a life-giving component in one's community—these are some of the blessings that the new education will seek to bestow upon its pupils.

Nowhere in our educational system is place made for presenting a generalized concept of the Universe. We teach the little things; but let the big things go. Why is this? Have we forgotten how, as children, we loved to "listen in" on the conversation of our elders when that chanced to touch upon the eternal verities? George Eliot counted the privilege that she had, as a child, of hearing the philosophical discussions of her father and his friends the chief formative force of her thought-life. And many another great person bears witness to the value coming to the growing genius from contact with mature minds. Our young people want to think our thoughts with us, not after us. They would breast the life current at the point where we do; instead we send them up the stream where the waters are shallow, or else put them aside in some swimming-hole of their own.

It is high time, as Mr. Sidney Morse has said, that we come to the point of view of Oriental philosophy which seeks to present such a synthetic conception of the universe and of man's relation to it as shall enable every individual to see and understand his special interests in their normal and necessary relations to the in-

terests of others in our complex civilization. Any lesser concept of education is incompatible, as Mr. Morse contends, with the ideals of democracy.*

But while the salvation of our Western civilization requires that we come to the viewpoint of Oriental philosophy regarding the spiritual oneness of life, the method of involution will be for the great majority of us quite a different process from that of the Orient. Souls in India are largely endogenous, growing, like the palm, from within outward; whereas the Western soul is, like the oak, exogenous, growing through outward struggle and conquest to an inner perception of the unity and meaning of life. We may not change an oak into a palm, nor a palm into an oak; so with these two types of involutionary growth, one is not to be transformed into the other. The West may not be saved through the mysticism of the East, nor the East through the industrial and economic organization of the West. Each has to grow heavenward according to its own law, and the hope of the world lies in their mutual recognition of this great biological truth.

That the West has fallen so far short of the

**Wanted—A New Educational View Point,* Sidney Morse, Education Foundations, Dec. 13, 1920.

ideals of Christianity is because it has sought to realize those ideals through an endogenous process of growth instead of the exogenous one natural to it. Have we, then, to repudiate Christianity? No, but let us go about growing toward the great truths of its teaching according to the law of our Western civilization.

That law has for the first time found definite formulation, I venture to say, in a book entitled *The Manhood of Humanity, or The Science and Art of Human Engineering,* by Alfred Korzybski, a Polish nobleman. In this very remarkable book the author, who is a mathematician and engineer, sets up a hypothesis which is not only a working hypothesis, but a workable one, I believe, for the construction of a new World Order—a working hypothesis, for it covers the facts, and is at once mathematical and scientific; a workable hypothesis, because it is built along lines that conform with the type of mind for which it is designed, the scientific, objective mind of the Occident.

Korzybski's thesis is simple; a child could follow it: As a farmer must know the natural laws that govern his crops, so humanity must know the natural laws for human beings, otherwise we cannot hope for the fullest development in life; which means the release of the maximum

natural creative energy and expression in mental, moral, material and spiritual, and all the other great fields of human activity. And every human activity, be it a scientific discovery, a picture, a temple, a home or a bridge, has to be conceived in the mind first, the plan thought out before it can be made a reality. Further, when anything is to be attempted that involves any number of individuals, methods of coordination have to be considered. Now the methods that have proved to be the best suited for such undertakings are engineering methods. Every engineer has to know the materials with which he has to work, and the natural laws of these materials, as discovered by observation and experiment, and formulated by mathematics and mechanics; so with the engineering of an idea toward a complete realization. The old concepts of matter, space and time which have been found sufficient for the building of bridges in the past serve, also, for this higher order of bridge engineering—the spanning of a gap in our human knowledge.

Obviously the all-important factor in the science of human engineering is man, and since there cannot be mathematical accuracy without proper classification, we have to know what that is by virtue of which man is Man. The an-

swer is in terms of time: Man is a time-binder —human beings constitute the time-binding class of life, as distinguished from animals, who are space-binders merely. By nature man is endowed with a certain power or energy by which he unconsciously works towards progress and improvement; it is the energy that invents, that imagines, reasons and creates; it is the energy that has carried forward the movement we call civilization.

Not only is this time-binding, civilizing energy peculiar to man; it is his distinguishing mark. It is plain that the life of man is in time. The fundamental law of the human class of life is binding time, the natural expression of which is the rendering of service by past generations to posterity. We have here a concept for the unifying of life past, present and future—a concept which affords through its far-reaching application to all branches of human activities that synthetic, organic basis which education is in want of, and one particularly adapted to our exogenous-minded youth, for many of whom spiritual truths are an unknown quantity. The boy whose whole bent is mechanical will have his imagination fired by this idea of Human Engineering as by no appeal to his inner self.

Our education is wrong because it belongs to

the biological epoch that is passing—to the space-world of animals, not the time-world of man. The watchword of Involution is co-operation, not competition. Obviously, before we can formulate a pedagogy suitable to the new era, we must know what the laws are that make for involution, and fundamental among those is the natural law of progress in time-binding or civilization, discovered by Korzybski to be PR^t where PR is progress registered at the end of a given generation, R is the rate and t the number of generations. "An amazing function," as Professor Keyser says, "and one destined to work great changes and many transfigurations" in our human affairs.* Education will become a very different process from what it is now. Pupils will be taught that ideas and thoughts are energies, and they will be shown how to direct these energies so as to make them contribute most effectively to the advancement of human welfare. It will be a dynamic and creative education, an education that will develop capacity for initiative and self-direction. And finally, it will be an education that will make for the involution of humanity, for, when men have learned to bind time, then will time become a binder of men.

**The Nature of Man,* Phi Beta Kappa address by Prof. C. J. Keyser, published in Science, Sept., 1921.

There is an old Sanskrit proverb which reads:

> Twofold is the life we live in—
> Fate and Will together run;—
> Two wheels bear life's chariot onward.
> Will it move on only one?

That is what science has sought to do—push life's chariot forward by the wheel of evolution alone, to the complete ignoring of the wheel of involution. This worked very well in a three-dimensional world, but now that mankind is coming to think in four dimensions, both wheels are essential to progress.

Before science can give a complete account of the life-process it must set up a hypothesis of involution to supplement that of evolution. We are concerned at this crisis in our human affairs with ideals and goals rather than with beginnings. But evolution gives no place to these. It is a one-way process, looking backward, and not forward. This thing, it tells us, happens today because that other happened yesterday. Of the influence exerted by the future it has no word. Based as evolution is upon causation, it cannot help us to determine our course as creators of the life-to-come. For this we must find a purpose sequence—discover the laws of involution.

The process in algebra of raising a number, or symbol, to an assigned power is called involution; for example, the second power of 3 is 9, the third power 27. The process of finding the root of a number is called evolution; the second, or square, root of 9 is 3, the third, or cube, root of 27 is 3. Involution is the direct process, and evolution is the inverse. The one is related to the other as multiplication to division.

Let us turn now to biology. There we find evolution defined as a process of unfolding or evolving. The plant evolves from the seed. Man has evolved from lower forms of life. To study the evolution of an organism is to trace it back to its origin, or root; to find from what it has evolved. The analogy to the mathematical usage of the term is apparent.

Suppose we reverse the operation: consider the infolding or involving of life. Logically this should give the power to which any particular form can be raised. And that is what I mean by involution—the process through which the lifting of life and consciousness to a higher level is accomplished. Involution and evolution postulate one another, and together constitute "an eternal equation." Viewed through the causal sequence of evolution, man is the creature of the past, but viewed through the purpose

sequence of involution, he is the creator of the future. Thus do "Fate and Will together run."

But it will be said that Science does not recognize purpose sequences. That is true of the Old Science, but not of the New. The concept of the fourth dimension has placed the future on an equal scientific footing with the past. The purpose sequence may now be viewed in the light of a reversed causal sequence. And more and more are we realizing that "It is Tomorrow, Not Yesterday, that makes Today what it is."

Our human race has advanced as far as it is able to do through the individual. We competitive human atoms have reached the limit of our egoistic development. To continue onward we must now accept a new law of progress—the Law of Involution. Its factors are the direct inverse of those that we have known as the factors of evolution. To live up to this law we must replace competition by co-operation; struggle and survival of the fittest by mutual aid; war by peace. A hard task, but only by putting our shoulder to the wheel of involution can we move life's chariot onward.

The Evolutionary Rhythm

There was a time when, for all that we knew to the contrary, the elements of matter were separately created, arbitrarily made individuals, having no relation to one another. Then the periodic law was discovered and each element took its place in a harmonious whole; indeed, so close is their relationship, one to another, that it is possible to describe an element, knowing only its position in the periodic table.

If the inorganic world of matter is constituted upon so perfect a rhythmic plan, surely we are justified in thinking that the organic world of life also has its rhythmic plan, could we but find it.

It was Herbert Spencer who first premised that the vast rises and falls of different kinds of life upon our globe indicate a periodicity in evolution. Nothing, however, was done toward establishing an evolutionary rhythm until H. M. Bernard* made the investigations recorded in his book entitled, *Some Neglected Factors in Evolution.* Since this book has given us the biological basis for our educational philosophy, we give the following brief summary of it:

*H. M. Bernard was an English scientist for many years connected with the Natural History Museum, London. *Some Neglected Factors in Evolution* is a posthumous work, edited and published by Mrs. Bernard.

The cell, long considered to be the unit of organic structure, Mr. Bernard treats as a form-feature of a fundamental network universally present in protoplasmic tissues. The most primitive organisms are, essentially, living networks from which all the tissues and organs of the higher animals and man have become differentiated, in response to an ever-widening range of environmental stimuli.

The periodic rise in the level of organic life through the appearance of new types of animals, which the Darwinian theory of variation does not explain, he attributes to a series of units of structure, starting with one simpler than the cell. Each of these units in turn, by colony-formation, has succeeded in producing an organism of a more complicated type, and has thus inaugurated a new and higher evolutionary period. In man, the unit of the present period, the builder of human societies, the psychical functions of the organic living network, latent in former periods, have been developed by interplay with a psychical environment. The mental development of man and the complicated problems of social life he postulates as being serial with the simpler phenomena of organic life and as pointing to some future

higher development of the great Cosmic Rhythm.

To gather up the evidence that Mr. Bernard finds for a periodic law in evolution:

(1) The structural units can be ranged in an ascending series.

(2) They act as nodal points between which all the independent forms can find their places.

(3) A certain resemblance can be traced between these successive forms.

(4) They also stand in a definite architectural relationship, the higher having been built up of the lower, while all the independent forms that come between any two of them can be analyzed in terms of the lower.

(5) This relationship is, in all cases, essentially the same, however greatly, owing to the increasing complexity of the organism, the appearances may differ.

(6) All the units possess certain characters in common, and it is these characters that seem to have led to their success.

This justifies us, I believe, in thinking that

> "There was no break in that long line of law
> Between the first life drifting in the sea,
> And man, proud man, the crowning form of Earth." *

**The Book of Earth,* Alfred Noyes.

The worth of any great discovery comes largely from the light that it throws on other fields of thought. It was so with Darwin's discovery. It will be so with Einstein's. The concept of relativity, like that of evolution, has great significance for all our thinking. Absolute standards of thought and conduct are fast breaking down. The continuance of our social order depends upon our finding a human principle of relativity.

The human mind is about to experience the greatest adventure that it has ever had. This change of mentality is due to the new ideas introduced by the doctrine of relativity. What we have supposed to be the last word in mechanism, i.e., the theory of relativity, is disclosing all reality to be organic. Even the atom has a life-history, a purpose and a goal.

Does this mean that science has thrown over mechanism? Not at all. The triumphs of mechanical science still stand—the marvels that they are. But mechanism is no longer the whole story, only the three-dimensional aspect of it. As Einstein has shown that we must have four dimensions in order to account for the universe,

so we must have four dimensions to account for life and its problems.

It is not going to be easy to make the change demanded by the new science. We have not only to learn new terms; we have to give new meanings to old ones. Time, space, configuration, structure, pattern, all require re-interpretation. And what is more, we have to approach the new ideas mathematically. Altogether, it is a difficult task that the new science is setting us. But once we discover the principle of human relativity, we shall not have to meet the problems of life single-minded any more than we now have to meet them single-handed. We shall be able to raise our thought to any power that we choose by thinking together.

There is a new art in the world, the art of thought-integration. To be sure, we know very little as yet of its technique, but we are learning it as we meet increasingly in clubs and groups. The reason that science has progressed far ahead of other branches of knowledge is because it has got hold of the trick. Its least discovery is quickly integrated into the mass of scientific knowledge and at once set to functioning for the advancement of the whole; whereas, sociology and education hold to theories and personal opinion, and make little advancement.

A new world awaits us—a four-dimensional space-time world. We have only to become co-conscious with one another in organic unions and its length and breadth, its height and depth will be ours.

In the Hegelian system the particular interest is shown to be the vehicle of the universal. What more fitting vehicle, then, could the concept of relativity find in our materialistic age than the measurements of space and time! Regret has been expressed that a concept of such universal application should have come in so special a form. But our minds were closed to any other approach. The concept of relativity is not new. It dates back to Plato and beyond. Again and again it has knocked at the portals of thought—knocked and gone unheeded. We should rejoice that at last it has found a vehicle of "particular interest" wherewith to effect its entrance.

The question that concerns us now is: What has the relativity principle in physics brought us for knowledge generally? After close examination of the various views and interpretations of the Einstein theory, Viscount Haldane gives, as his opinion, that there is a broad feature

which they exhibit in common, namely: "Into the results yielded by direct sense-awareness concepts have not only entered, but have entered with transforming power."* And he adds: "It is therefore not surprising that the theory of relativity should be considered to have shown that the reality of a world of space and time can only be stated in terms of concepts." Professor Eddington goes further. He says, "The relativity theory of physics reduces everything to relations; that is to say, it is structure, not material, which counts. The structure cannot be built up without material; but the nature of the material is of no importance."†

It would seem that physical relativity has succeeded in bringing realism and idealism into congruence and with that the last "opposition" to our passing into a four-dimensional realm of being is overcome. Before that is accomplished, however, we have to do much reconstructing of our thought. We cannot move into a new space world as we would move into a new house. We have to learn to think as four-dimensional beings before we can hope to find ourselves living in a four-dimensional world. In this, as in

**The Reign of Relativity,* Haldane.
†*Space, Time and Gravitation,* Eddington.

all other organic manifestations, the form follows the function; not the function the form.

Our outer realm grows only with our inner. So close, indeed, is the connection that they may well be different aspects of the same reality; the one projected outward as spatial phenomena; the other projected inward as conscious experience.* Certainly the limitations of the two go hand in hand. Hence, if we would transcend our three-dimensional space, we must expand the range of our consciousness; in a word, grow a larger self.

The connection of creative involution with the fourth dimension is now apparent. It is as we form psychic and spiritual unions with our fellow-men that we achieve the extension of consciousness essential to four-dimensional awareness. We may not behold a new heaven until we have created a new earth. But once that is accomplished we shall see the holy city descending and its walls will be four square and adorned with all beauty.

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*See *Consciousness, Life and the Fourth Dimension*, Eriksen.
Note: The last section is taken from my *Creative Involution*.

PART V

ANALYSIS OF THE PORTRAIT

"But all, the world's coarse thumb
And finger failed to plumb,

. . . . . .

All I could never be,
All men ignored in me,
This, I was worth to God, . . ."

On the Making of Reports

Dear Mr. Parent: You are expecting a report from me concerning Jimmie's work, the progress he is making in his studies, and something of his growth and development generally. That report I shall be glad to make, providing you and I can agree upon a system of measurement. Unless we have the same ideals and educational values, Jimmie is likely to suffer distortion in your eyes through my account of him, and that is the last thing I should want.

The making of reports is not the simple matter that parents take it to be. I do not refer to the labor required—and income tax reports do not involve more of painstaking care and multiplicity of detail—but to the lack of a common basis for measuring. There are no absolute values when it comes to the things of the mind. What is a fair mark with me may seem a low one to you, or vice versa. Hence, exercise all the care I may, there is danger that my report induce a warp or twist in Jimmie's world.

Very true, you say, but you can tell me if Jimmie is doing well in his studies? You have put the question wrong end to. You should ask, Are the studies doing well in Jimmie? Are they growing in him a consciousness of a larger selfhood, or are they filling his mind with "chunks of unassimilated ideas," as Bernard Shaw says he finds the minds of most educated persons to be.

Our concern is not so much what Jimmie learns as it is how his learning is making for mental development. If I were to tell you that he has passed decimals, or reached Africa, I would be giving you the linear measurement of that growth only. The question is not how many facts he has acquired, but into what new dimensions these are leading him. A broad outlook, high aspirations, a deep sympathy and understanding, all these he must have, and then there is that fourth dimension which the scientists are calling "quickness;" that, too, we would wish for him—quickness to respond to human need. I should have to be a better mathematician than I am to compute his growth in all these directions.

All effort to estimate a pupil's achievement must largely fail. Who is to say how much of what he has forgotten is still an unconscious

force in his life? In one's own experience, how often does some long-lost fact spring suddenly into memory, bringing with it out of the depths of being new insight and vision! To give pupils those ideas only for which they have an immediate practical use would be to delimit the range of their minds and bind them to the realm of material things and present issues.

The time element also plays an important part in mental processes. When surprise was expressed at the success in after-life of a man who as a boy at Rugby had been undistinguished, Archbishop Temple answered, "It is not what they are at eighteen, it is what they become afterwards, that matters." How little we are able to forecast that! Those pupils of mine who had been the poorest scholars to my marking achieved the highest service in the world struggle. I had thought I could estimate a boy when it came to concentration and purpose, yet the one whose quick, volatile mind was my despair was distinguished above all the others. And another, a painstaking, close student, was rejected in the flying game because he was too careful of results.

Dr. Ritter has well said that we have no sense wherewith to observe potentiality and no

thought with which to conceive it.* Nor have we any intimation of what kind of sense or what kind of thought could do that, even supposing it might be done. Perceptual knowledge is limited to the actual attributes of the perceived object. It is the quintessence of such knowledge to be thus limited. Dr. Ritter emphasizes the fact that all chemical action requires a certain amount of time; that is, it takes time for the actual attributes of the product to evolve from their latent condition in the reacting elements. Hence, when one attempts to predict the attributes of the product, one is attempting to eliminate the time element. And the same is true of our effort to forecast the scope of a boy's mentality from the qualities he happens to manifest today. Every individual has his own reactions and his own time-period. We must indeed be clairvoyant would we predict what our pupils are to become.

Having followed me thus far, you ask if there are not intelligence tests that could be used effectively to ascertain a pupil's mental rating. Yes, but again those can tell us nothing about the mind except so far as we are able to give the results a mental interpretation. Whatever my skill and experience I fear I should be speaking of the static Jimmie, not the dynamic

*William E. Ritter, *Higher Usefulness of Science*, p. 74.

one. Such, however, is the "scientific prepossession" of the American mind at the present time that psychological tests are coming to have a large place both in the theory and practice of education. I believe that a great good will result to humanity therefrom; namely, the recognition of the uniqueness of the individual. The use, however, of such tests for the classifying of children I deplore. But there is the pity: children should not have to be classified as so many animals. If they were not brought together in herds the need of mental segregating would never arise. How students feel about this method of rating their powers is shown in the following editorial notes from the *Occident,* magazine of our State University:

"A university that gives a course in the philosophy of knowledge thinks that it can measure the knowledge of a man. We are taught that the universal can not be measured by the particular. We are taught that we can not see either God or good, beauty or knowledge, with our physical eye. Yet we are graded as if our minds were as material as oranges ('fancy, choice, standard, cull—one, two, three, flunk') and our information as numerical as eggs. . . . We are cruelly raised or sunk into the law of averages."

An article on mental tests by Mr. Beardsley Runel* is the sanest estimate of the subject I know. He says in substance: Intelligence is dependent on general capacity. It cannot be measured on a linear scale any more than you can measure a man's weight in inches. The habit of thinking about intelligence and ability in terms of "derivative facts" such as those ascertainable by tests is limiting the value of those tests for the establishing of general mental laws. "I am inclined to think that intelligence may best be thought of quantitatively as multidimensional."

The first concern of education is the dignity of the human soul. If the child is less bright than his fellows, he should not be made cognizant of that fact. It is the birthright of every individual to feel that he is a normal being and on an equality with his world of persons. And it is the divine right of the parent to believe his child a superior being. Without such vision on the part of parents there would be no projecting upward of the race to higher levels.

Experimental tests have to do with the past. They show what has been created, while education looks to the future—what is creating. The setting up of the right supra-centers of con-

Journal of Philosophy, Psychology and Scientific Methods, January, 1920.

sciousness for the child is a far more vital matter to my mind than the determining of some sub-center that is wrong. Analyze the night-dreams of your son if you choose, but do not forget his day-dreams. It is through them that he is going to rise to a higher consciousness.

Would you be informed as to how Jimmie is growing, study Jimmie. He is his own up-to-date, unbiased report. And be sure that in your studying you are sympathetic and constructive, not analytical and over-anxious. Remember that criticism is to the soul what the knife is to the body. Would you truly know Jimmie, be at one with him in his hopes and aspirations. All this will take time, and you will most likely say that you have little to give. I ask, what does it profit a man if he gain the whole world and lose his son?

We can no more abolish war than poison oak by chopping at its top growth, so long as we leave its roots, and that is what we are doing by holding to an education which fosters individualism and egoism. The little child begins school feeling himself at one with all humanity, but through the grading and marking system and the fear of failure which that induces, the school soon succeeds in setting him over against his fellows. From that time on, the aim and end of his education is to make him "an individual efficient in the struggle for his own interests."

It is vain to hope for world unity until we make ability to co-operate, rather than to compete, with others the criterion of success in our schools. This requires a change in the whole educational approach, a change which we have been able to effect in our demonstration school without loss of values to the individual; indeed, with an enhancement of values.*

Our first step was to abolish the daily marking of recitations. Record books for individual ratings were replaced by charts for graphing the purpose and achievement of the class as a group. For these charts we adopted a simpli-

*See page 233.

fied form of the Gantt Chart, of which the characteristic feature is the relating of facts to time. Through the use of this chart the industrial world is discovering that time is the important element in production, and we find that this holds in education. Management in the schoolroom, as in the factory, is concerned with the future; and decisions which have to do with the future manifestly must be based on knowledge of the past. Our Group Charts make it possible for the teacher to compare what is being done today with what was done yesterday and a week ago. By means of the achievement curve (figs. 2 and 3) the class visualizes its concerted progress. It watches with intense interest the rise and fall of the curve from day to day, and immediately seeks the cause underlying any sudden change. The horizontal lines (figs. 1 and 2) measure the strength and continuity of group-purpose. The initials inserted in the breaks show at a glance who are the weak links. It is apparent, also, that the connection

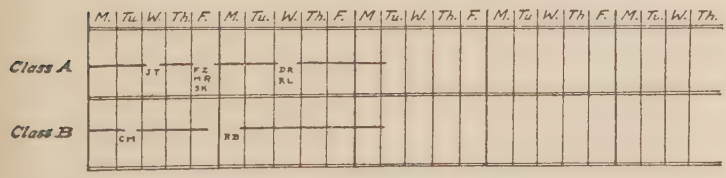

CHART OF GROUP PURPOSE

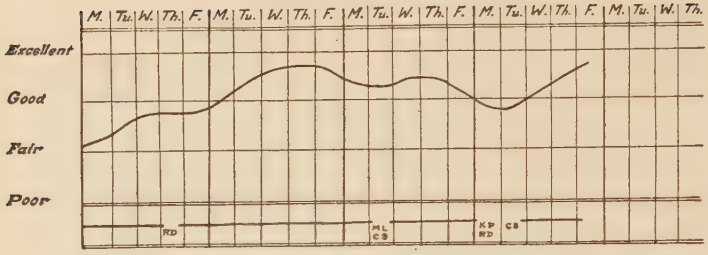

CHART OF GROUP PURPOSE AND ACHIEVEMENT

between purpose-line and achievement-curve is a close one, a break in the one being accompanied in most instances by a falling of the other. As the pupils study these concomitant variations from day to day they come to a perception of how cause and effect work in the determining of their lives.

Through this system of marking, the individual student is awakened to his responsibility to the group, and the group in turn learns that it has a duty to its members. There is a con-

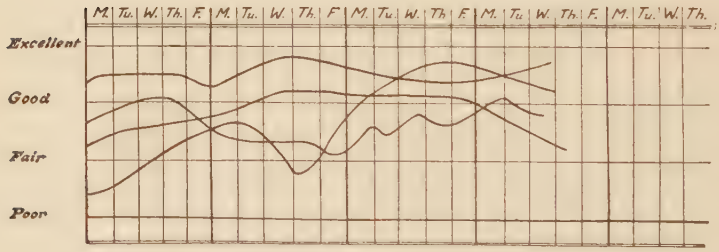

CHART OF ACHIEVEMENT IN SUBJECTS
(Curves of Different Colors)

stant interchange going on between individual and group, a process of creative experience. The weak student is inspired to greater effort. He has an opportunity to "make good," for his classmates are now with him, not against him. The able student learns the joy of helpfulness. And all are lifted to the new level of power that comes through release from self.

Since we have been using these charts, the work and purpose of our school have acquired a surprising momentum. We believe that we have tapped that strange new energy called "time-binding."*

What, one asks, is time-binding? Before we answer, let us consider for a moment this thing we call time, of which we are always talking. No matter how efficient we become or how we "speed up," we never feel that we have realized the full worth and significance that time has for our lives. Always some subtle quality eludes us. Clocks, watches, calendars give us little assistance. Those merely measure the flow of time, and we want something more.

Time is the stuff of which our lives are made. It is the on-going of things and experiences about us and through us. But to possess time, to make it full and immediate we must gather it

*See page 202.

up, and the only way that we three-dimensional beings know of doing this is to bind past, present, and future together into one reality. Hence, time-binding.

The charts which I have described recognize this time-binding urge, an urge which children feel more than adults.

Educational Achievement at the Williams Institute†

On January 15, 22 and 29, 1925, the Stanford Achievement Test, Advanced Examination, Form A, was given to the children in Grades IV to VIII at the Williams Institute. The authors* explain that their aim "was to construct a battery of tests which would cover practically all of the curriculum from Grades II to VIII, which would be easy to administer, which would not be too time-consuming, which would yield consistent results (have a high reliability) and which would have the greatest possible validity as a basis for the grading and classification of pupils. The authors believe that all these aims have been realized, although they would be the last to claim that the examination is as perfect as it might be made." This statement is quoted from the Manual of 1924, from which all evaluations of the examination were also made.

The distribution of the children by age and sex was as follows:

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†A report made at the annual meeting of the Western Psychological Association (1925), by Esther Allen Gaw, Associate Professor Psychology, Mills College.

*Kelley, Ruch and Terman; Stanford Achievement Test, 1924.

Grade	IV..... 6 boys	3 girls	Total	9
	V..... 5	2		7
	VI..... 2	4		6
	VII..... 7	3		10
	VIII..... 5	6		11
	Total.....25	18		43

The youngest child was a boy 8 years and 7 months old and the oldest a girl 13 years and 8 months old. The average age was 11 years 5 months. The individual Stanford Binet is given to every child on entrance into the school; these results are also used in the following discussion. The Stanford Achievement Test consists of three tests which, thrown together, form the score called Reading, two parts which make up Arithmetic, and one part each for Nature Study, History and Literature, and Spelling, which is a dictation exercise. All of these put together form a composite which is called Educational Score.

For convenience, and since the average age is close to 11 years, the educational quotients and the intelligence quotients were changed to years and months, in other words to educational or mental age, at 11 years. This enabled us to make comparisons between children who actually differ widely in age.* For instance,

*Inglis, Alexander, *Inglis Intelligence Quotient Values*, 1923.

if a child who is 9 years old at the time of the achievement examination has an I. Q. of 121, his mental age in months, assuming he is exactly 11 years old, would be 13 years 4 months or 160 months. If his Reading Quotient is 124, assuming that he is exactly 11 years old, his Reading Age would be 13 years 8 months or 164 months. These values can all be read directly from the Inglis Scale and were the values used in finding Mean, Standard Deviation and Correlations. Therefore in looking at the tables given below, the Educational and Mental Ages should be considered as the average for 43 children all exactly 11 years old, or as divided by 132 (the number of months in 11 years) if the reader prefers to think of quotients.

Table I

Mental ages as they would be if all children were 11 years old:

(a) Whole Group—43 children: 25 boys, 18 girls.

	Read.	Arith.	Nat. St.	Hist. and Lit.	Lang. Use	Spell.	Ad. Age	Stan.-Binet
Mean	161.33	147.00	154.86	156.98	167.56	147.72	153.26	154.28
S. D.	24.19	16.55	23.15	23.73	25.23	23.29	19.94	17.34

(b) Group I—21 children who had been in the school one year or less.

	Read.	Arith.	Nat. St.	Hist. and Lit.	Lang. Use	Spell.	Ad. Age	Stan.-Binet
Mean	158.71	149.00	149.71	156.91	164.67	143.71	151.38	155.91
S. D.	23.55	12.53	21.63	23.42	29.64	20.00	17.87	15.07

(c) Group II—22 children who had been in the school 1½ years to four years.

	Read.	Arith.	Nat. St.	Hist. and Lit.	Lang. Use	Spell.	Ad. Age	Stan.-Binet
Mean	163.64	145.14	159.82	157.05	170.32	151.55	155.00	152.73
S. D.	24.69	19.43	23.44	23.85	19.71	25.70	21.49	19.24

It is seen from Table I that the average mental age of these children is slightly higher than their educational age, the former being 154.28 and the latter 153.28. The difference between the two is negligible since it is so small that it would occur by chance, even if there were no true difference. Both the educational age and the mental age are higher than that of an unselected group of 11-year-old children, which would be 132. Considered in terms of quotients, that for intelligence is 116.66 and that for education is 115.91, where the average of an unselected group would be 100.

The spread of the group, or the deviation from the average, is shown in the figures called standard deviation (S. D.). Each of these figures shows how widely below and above the mean the actual mental and educational ages scatter. The mental age of 154.28 has slightly less spread, as shown by the S. D., of 19.94. In mental age the middle two-thirds of the group ranges from 137 to 172, while in educational age the middle two-thirds ranges from 133 to 173.

These figures show that at the Williams Institute there is a selected group of children above the average in both innate capacity as tested by the Stanford-Binet, and in achievement as tested by the Stanford Achievement, and that the achievement is practically the same as the innate mental alertness. The standard deviations show that there is slightly more variability in achievement than in capacity. Although these children do not all approach the intelligence average of the children reported by Terman in *Genetic Studies of Genius,** in certain very striking ways the group results are comparable. A study of the Williams group results shows that the accomplishment ages, with the exception of arithmetic and spelling, equal or exceed the mental ages. Terman says, "The superiority of the gifted is greatest in general information, language usage and reading," (p. 306). DeVoss says, "the scores in Arithmetic, Reasoning, Arithmetic Computation and Spelling Dictation are conspicuous in their ability to preserve their independence from other scores," (p. 362). And again Terman says, "The excess in achievement . . . is general rather than special, although it is somewhat less marked in spelling and in arith-

*Terman, et al., *Genetic Studies of Genius,* 1925.

metic than in general information, reading and language,'' (p. 636).

Whatever may be the explanation of this discrepancy in achievement in Terman's group, it is possibly due in the Williams group to the fact that the children are young for their grades. The motor co-ordination demanded in the dictation exercise which is called Spelling, would be a skill that might not develop equally with understanding, as shown in language usage, or reading, or the studies which primarily involve reading, such as nature-study and history and literature. Also the reasoning demanded in arithmetic may be comparatively undeveloped in children relatively young. Notwithstanding, these 43 children exceed other children of their own age in arithmetic.

Although we are interested in the fact that on the whole the children are living up to their capacities, we are even more interested in answering the question: Do the children who have been in the school longer show the influence of the school in their educational achievement? The crude differences shown in (*b*) *and* (*c*) of Table I, although apparently in favor of Group II do not mean much unless they are interpreted

in terms of the sigma of the difference of the means.*

	Read.	Arith.	Nat. St.	Hist. and Lit.	Lang. and Use	Spell.	Ed. Age
Group I	.586	2.797	1.946	.283	1.975	3.156	1.808
Group II	3.607	2.303	2.093	.810	5.480	.249	.424

Since the statistical report given in the note is not easily understood by many readers I have thrown the difference there shown into an easily comprehended table below.

Differences between the Means of the Stanford Binet and the Mean of each part of the Stanford Achievement:

	GROUP I	GROUP II
Reading	+Exceeds expectation.	+++Greatly exceeds expectation.
Arithmetic	— Falls very far below expectation	—Falls below expectation.
Nature Study and Science	— — Falls below expectation.	++ Greatly exceeds expectation.
History and Literature	— Falls slightly below expectation	++ Greatly exceeds expectation.
Language and Usage	+Exceed expectation.	+++So greatly ++ exceed expectation that the score is an impossible one.
Spelling	— — — Falls very below expectation	—Falls slightly below expectation.
Educational Composite	— — Falls below expectation.	+ Exceeds expectation.

It will be seen that when Group I exceeds expectation, Group II in turn greatly exceeds, and, conversely, when Group II falls below expected or reasonable difference, Group I falls far below. The expected or reasonable difference between capacity and achievement is less

*The figures are the differences between the Mean divided by the sigma of the difference when Mean—is always the Mean of Stanford-Binet for Group I or Group II, as the case may be, and Mean II is one of the parts of the Educational Test.

for Group II when capacity is not attained, and it is greater for Group II when more than capacity is attained.

In addition, it must be remembered that this is a study based on difference within a small group of 43 children who are relatively high. It is not a comparison of the achievement of those who have been at the Williams Institute one and one-half to four years with children in the world at large. If such a comparison could be made, the comparison of achievement would be even more dramatic because the spreads would be greater and the correlations would be less.

The statistical study of individual deviations, which is too involved to report here, confirms the difference between the 21 children who have been in the school a short time and the 22 children there longer. Even taking into consideration the relative unreliability of the data because of the small number of cases, it seems to be undoubtedly certain that the latter (the children of Group II) show the influence of the school and more truly live up to their capacities than do the latter (the children of Group I). This would indicate that the school has found the way of enabling children to attain their full intellectual development.

When the Soul Goes to School

[*Written by one of our mother-teachers*] Although we regard the soul as the highest human principle, we have failed to devote to it an amount of consideration proportionate to the research which has been given to the study of the body and the mind. It might be said that we accord the soul an incidental rather than an intelligent education. It comes to school in the character of "little brother," and like that small visitor is left to its own devices—saving only when it disturbs the peace. Fortunately for its own salvation, the soul has at last disturbed our educational equilibrium so seriously that it has been deemed advisable to give it an education on its own behalf. But this is not, in itself, enough. Before the soul can go to school in very sooth, the school must go to the soul and learn its nature and its laws.

Even in an environment apparently ideal, a child's soul may receive such unconscious abuse or neglect as to retard and distort its growth. Take a sensitive, groping child, who puts forth little mental shoots of beauty and originality, trying thus to reach those around him and to share his inner experience with them. Through ignorance or indifference these little faint soul-quickenings are met with inattention or rebuffs,

or even with ridicule. Now the soul, like a planet, or any other living organism, must protect itself in some way: consequently it covers its wound with a scar-tissue which may be likened to the thick outer skin of a plant, the shell of certain animals, or the callous of a human part exposed to impacts from the outer world.

It is to be noted that this cell-covering is quite as likely to grow as a protection from over-attention and intrusion as from neglect or abuse. We have all seen children rendered shy and sensitive by the continual pushing and boasting of misguided parents. The soul-wall, like the cell-wall, is a containing integument. It is developed to prevent well-meant sapping of the soul.

Still more common, perhaps, is the soul whose extreme sensitiveness to the contact of its fellows has made it develop a rough exterior, which actually hurts others in trying to avoid hurts to itself. The possessor of such a soul is continually and painfully misunderstood. There are yet other delicate and subtle souls who have developed, like some plants and animals, a protective coloring, making them so like their surroundings as to be almost indistinguishable from them. Their chief desire is

to shrink from human contact and to escape observation.

Whatever the causes that have produced this soul-wall, every child has one to a greater or less degree. No doubt it is a useful, necessary protection, but how fortunate is the soul that has only a natural, elastic wall, one which affords the protection and privacy so necessary to growth, but which is capable of functioning like the human skin! It is possible to develop such a wall only through understanding and sympathetic contact, through wise as well as loving guidance. And this is the trend of the newer education: To let the soul grow, naturally, freely, beautifully.

When does this soul-growth begin? Some say the child receives his most lasting impressions before he is seven, and that his whole life is shaped and colored by then. Certainly the soul does not wait until school age to grow and blossom. Parents must learn to let their children grow; to hamper them neither by neglect and inattention, nor by intrusion and over-anxiety. The soul's growth begins in the home, and the home is capable of developing unbounded beauty and power. Parents and children can grow and learn together, the more so if there is a conscious purpose and a willingness to be

part of still larger groups, and not a self-sufficient whole.

Unfortunately not every child can begin life in a right environment, and since the school has to deal with children as they are, there is a great problem to be solved. More and more, people are coming to believe that the solution lies in the ideal of associated growth and mutual development, with conscious, coherent, purposeful groups as the units. We hold it as our basic educational and biological thesis, and scarcely a week passes that we do not find striking confirmation of it in the foremost thought of the day, whether in the fields of philosophy, education, economics, or fiction. Like all other great truths, it is always capable of fresh approaches and new applications. To apply it practically is the work of creative education.

There is less stress and strain, more profit and good will, when the class can proceed as one group. The truly inspired teacher has here her greatest opportunity for service to the child. She may teach the child to express himself easily and naturally, for it is in the group that any individual, whether adult or child, finds the greatest freedom and inspiration for expression, which is one of the main purposes of education. It is through such expression

that the hardening of the soul-wall is to be prevented. When a child expresses some of the inward beauty he feels, the experience passes through the wall, leaving it more permeable, so that other experiences may more readily pass in and out. The same thing happens when a child has caught and absorbed another's experience, has "taken it in," as we say. The process should be as natural as inhaling and exhaling air; and this transfusion, a sort of spiritual osmosis, is what keeps a person responsive, elastic and alive. It is when the soul does not function in this way that it develops its horny covering.

If ideal conditions prevail in home and school from earliest infancy, people would work easily and naturally in harmonious groups, but a group of young people of high-school age in these days presents as great a diversity of development and adaptability as there are members in the group. Here, in order to hold the ideal of the group, the class must become a conscious and purposeful unit. Let us take a class of six or eight young people. By now each has his distinct soul-wall. These differ, for every circumstance has affected each individual differently. Since these differences constitute the personality of each individual, the aim is not

to obliterate distinctive characteristics, but to encourage expression and receptivity, which are hampered by false and artificial eccentricities. The most fortunate member of the class has the most elastic soul-wall, open to impression, capable of permitting expression and absorption, not liable to hurt or injury, and not presenting rough surfaces or sharp projections to hurt others. The less fortunate soul has a rough and horny epidermis, with which he is continually wounding his neighbors, but, as has been noted, he has this rough and dangerous exterior because he himself is over-sensitive, and he hurts himself each time he scratches another person, so that he wastes a great deal of time in suffering. Nevertheless, his soul may be like the pearl concealed in the oyster-shell. Between these two types are souls of as many shapes and textures as there are individuals in the class; yet there is a magic which will make them as one soul. It is the magic of the group-spirit.

The Worm Turns

Characters: Students in our Orientation College (graduates of many high schools)

Stanley: Say fellows, don't you think it's about time we gave this Education of ours an intelligence test? Here we are through high school, and not a word about the New Geometry. Yet the astronomers and all the other scientists are using it every day of their lives. I say it's a crime the way we're kept in the dark.

George: Maybe they're saving up the new stuff for college.

Fred: College! Do you think one college man in a hundred has ever heard of Bolyai or Lobachevski?

Stanley: What! With so much talk about keeping abreast of the day—

Warren: Abreast of antiquity! That's where we are! Believe me, Education's just about two thousand years behind the times! Look at her, sitting there hanging on to Euclid's parallel-axiom and an obsolete three-dimensional space-world! It is to laugh!

(Enter a group of girls)

Betty: Hello, people. What's it all about?

Emir: Same old story. Our high school

teachers didn't give us a fair deal. What do we know about non-Euclidean geometry and hyperspace and—

ETHEL: What do *they* know! Why, the poor dears haven't even heard of them, let alone teaching them.

MEREDITH: Oh, have a heart! Remember these geometries are new. How do you expect—

RALPH: We have a right to expect the last word in everything. It's the teacher's business to keep in the front row of intellectual progress, isn't it?

VERDA: They're too busy marking papers.

VICTOR: Ha, ha! That's another joke. Why don't they spend more time sharpening their own wits, instead of wasting it in making estimates of ours?

DOROTHY: Don't put all the blame on the teachers. It's the educational system that's wrong. Curriculum—that's all the system cares about.

LAWRENCE: Just the point we're making. Education doesn't care *enough* about the curriculum. That's why it's so terribly behind the times.

EDITH: We're not interested in what people were thinking about in prehistoric ages; we

want to know what's going on in their heads today.

JOHN: I'll say we do! But I doubt if there's much chance of it.

HARRIET: Unless the students themselves get busy—take the curriculum into their own hands and demand some live material to work on.

ROBERT: I'm with you! First of all, let's put Miss Education through her paces. We ought to insist on having the lady's I. Q. before we entrust our precious minds to her for further training.

SARAH: Certainly, students ought to set the requirements, not the colleges.

STANLEY: Right-o! Now you're talking. I move that we, the assembled, constitute ourselves a committee of the whole to make out a test for Education. Suppose we pattern it after that psychological test they put over on us last week. Boy! We'll give the colleges something to think about!

Psychological Test for Educational Institutions

Recommended for the use of students by the Committee on College Selection Intelligence Tests.

General Directions to Colleges (read carefully)

This is a test to see how intelligently you can meet the change in thought demanded by modern science. It is important that you do your very best, otherwise you are not likely to receive all the advantages to which your reputation as a college entitles you. Considerations such as a large student-enrollment, financial support, the confidence of the public, and many others will depend on the grade which you make in this examination.

Read each paragraph and then answer the questions which are asked just beneath the paragraph. Time allowed: 36 minutes.

TEST

The situation in regard to education at the present time cannot find its parallel without going back for some centuries to the break-up of the medieval traditions of learning. Then, as now, the traditional intellectual outlook, despite the authority which it had

justly acquired from its notable triumphs, had grown to be too narrow for the interests of mankind. The result of this shifting of human interest was a demand for a parallel shifting of the basis of education, so as to fit the pupils for the ideas which later in life would in fact occupy their minds. Any serious fundamental change in the intellectual outlook of human society must necessarily be followed by an educational revolution. The law is inexorable that education, to be living and effective, must be directed to informing pupils with those ideas, and to creating for them those capacities which will enable them to appreciate the current thought of their epoch.—*The Organization of Thought*.—A. N. Whitehead.

1. What change in human society is taking place today?

2. What happens when human interest shifts?

3. How can we make our education relevant to modern thought?

TEST

One of the foremost aims of science is to build up a conception of the world which shall correspond more and more closely with our experience. As the scope of that experience enlarges we shall naturally be forced, from time to time, to modify the world-picture we have already formed. The sun, the moon and the stars appear to revolve about the earth. That this might be an illusion, that the actual motion might be a rotation on the part of the earth, had been suggested

as early as the third century B. C. by the Greek astronomer, Aristarchus. The idea lay dormant until reawakened by Copernicus in A. D. 1543. As late as 1616 a body of learned men, sitting in judgment over Galileo's indorsement of the Copernician standpoint, pronounced it "absurd in philosophy." Thus tenaciously do men hold to their accustomed habits of thought; thus centuries passed before men learned the lesson that what we observe directly is the relative motion of the stars. Once more today the lesson we have to learn is one of relativity. Once more we must seek to overcome mental inertia, to liberate ourselves from preconceived ideas.—Adapted from an article by Alfred J. Lotka; *A New Conception of the Universe*—Harper's Magazine.

1. Why do we need to change our world picture from time to time?

2. How long did men believe the sun to revolve around the earth?

3. Who first questioned this theory?

4. Copy the first three words of the sentence which tells us that our viewpoints must change.

5. What is meant by mental inertia?

6. What is the word without which the central thought of the paragraph would be lost?

7. What is it that holds our minds in thrall?

TEST

Pure mathematics is the vanguard of all sciences, it has marched centuries in advance of them all. Calculus was discovered nearly two hundred years before the science ot chemistry was far enough advanced to allow the use of calculus as one of its instruments of research. Practically the same thing is true of all the other physical sciences, including engineering. Today mathematicians are forging ahead into the realms of abstract thought and pure logic as never before; judging from the past, some of the truths which they are revealing now may not be put to what we are pleased to call use for centuries to come. But those truths will ultimately prove to be a valuable aid in solving many of the perplexing problems connected with our education and life generally.—Adapted from *The Fourth Dimension and the Bible,* Wm. A. Granville.

1. Do the sciences make immediate use of higher mathematics?

2. What reason may be given for the fact that the science of education is not using mathematics as an instrument of research?

3. What reason have we for thinking that mathematics will ultimately prove to be a valuable aid in solving many of the perplexing problems of education?

. . . The birth of non-Euclidean geometry was and is one of the most momentous events in the history of thought; no other has served to reveal in so clear

a light the nature of logical Fate and the nature, scope and limitation of intellectual Freedom; no other has so well disclosed the distinction—which is radical and cannot be obliterated—between the world of conception and the world of perception—the world of pure thought and the world of sensuous experience; no other has so clearly defined the great problem of ascertaining how the two worlds are interrelated; the matter in question—the advent and nature of non-Euclidean geometry—is one of the few great mathematical matters that professional philosophers have seriously sought to understand and it is one that has at the same time persistently haunted the imagination of the educated portion of the non-mathematical public; many, very many, have been the attempts to explain the subject in the daily press, in spoken lectures, in magazines and books; nevertheless, outside of mathematical circles, understanding of the matter, it must be owned, is meagre; for making the matter clear to the man-in-the-street adequate means has not yet been found.—*Mathematical Philosophy,* Cassius J. Keyser.

1. What two worlds are defined by the discovery of non-Euclidean geometry?

2. Why is it important that students of geometry be instructed in non-Euclidean as well as Euclidean geometry?

TEST

The four-dimensional world is no mere illustration; it is the real world of physics, arrived at in the recognized way by which physics has always (rightly or

wrongly) sought for reality. I hold a certain object before me, and see an outline of the figure of Britannia; another observer on the other side sees a picture of a monarch; a third observer sees only a thin rectangle. Am I to say that the figure of Britannia is the real object, and that the crude impressions of the other observers must be corrected to make allowance for their positions? All the appearances can be accounted for if we are all looking at a three-dimensional object —a penny—and no reasonable person can doubt that the penny is the corresponding physical reality. Similarly, an observer on the earth sees and measures an oblong block; an observer on another star, contemplating the same block, finds it to be a cube. Shall we say that the oblong block is the real thing, and that the other observer must correct his measures to make allowance for his motion? All the appearances are accounted for if the real object is four-dimensional, and the observers are merely measuring different three-dimensional appearances or sections. . . . Reality is only obtained when all conceivable points of view have been combined. That is why it has been necessary to give up the reality of the everyday world of three dimensions. Until recently this comprised all the possible appearances that had been considered. But now it has been discovered that there are new points of view with new appearances; and the reality must contain them all.—*Space, Time and Gravitation,* A. S. Eddington.

In the following statements write C in front of each thought which is Contained in, or may be derived from, the above paragraph; and write N in front of each statement the thought of which is Not contained in, or cannot be derived from, the paragraph.

He who doubts the reality of the four-dimensional world can only be compared to the man who doubts the reality of the penny.

Physical reality is the synthesis of all possible physical aspects of nature.

A vast number of appearances may be combined into one consistent whole and yet the result may still be only an appearance.

With each new appearance a new dimension must be added to the world.

TEST

The geometry studied in the schools is divided into two parts, Plane Geometry, or Geometry of Two Dimensions, and Solid Geometry, or Geometry of Three Dimensions, and the study of these geometries suggests an extension to geometry of four or more dimensions. In a plane, for example, one line may be perpendicular to another, and the position of any point can be determined by starting from a known point and measuring in two given perpendicular directions. In Solid Geometry there may be three mutually perpendicular lines, and the position of any point can be determined by starting from a known point and measuring in three given perpendicular directions. Thus the question arises: Why may there not be a geometry with four mutually perpendicular lines, in which the position of a point is determined by measuring in four perpendicular directions? Again, the area of a rectangle is expressed as the product of its base and altitude, and in Plane Geometry

the things that are studied are made up of straight or curved lines or are bounded by such lines. The volume of a rectangular solid is expressed as the product of its three dimensions, and the things that are studied in Solid Geometry are mostly made up of flat or curved surfaces or are bounded by such surfaces. Why then may there not be rectangular figures of four dimensions and a study of things which we may call flat or curved spaces?

The Geometry of Three Dimensions is more extensive than Plane Geometry, yet nearly everything in it is more or less analogous to something in the plane; and so the Geometry of Four Dimensions would be still more extensive, yet related to the three-dimensional geometry as the three-dimensional geometry is related to the two-dimensional. . . .—*The Fourth Dimension Simply Explained,* Henry P. Manning.

1. How is four-dimensional geometry related to three-dimensional geometry?

2. How would you go to work to discover the details of a four-dimensional geometry?

3. A plane is generated by a line moving out of itself. A solid is generated by a plane moving out of itself. Continue the analogy.

TEST

What appear to us as phenomena—changes proceeding in the things of our world—may be the manifestation, through a sequence of temporal changes, of a dimension of which we are not *spatially aware.* Life, growth, organic being, the transition from simplicity

to complexity, from the acorn to the oak, from the egg to the chicken—all these, to this view, are evidences of a four-dimensional extension, for they involve relation which cannot be expressed in terms of length, breadth and thickness but require *time* for their unfolding.

It will be helpful in understanding in what sense this may be true to dramatize to the imagination the predicament of a consciousness limited to the two dimensions of a plane—*a flat-man*—in trying to understand the true nature and extent of a solid of our space intersecting and passing through that plane which constitutes his world. Conceive of that world as a *film* into which such a solid was introduced. Its third dimension—the one perpendicular to the plane—could not manifest itself to him as spatial extension but only as temporal change—not as a *thing* but as a *phenomenon.* All that he would be conscious of would be the changing cross-section which the solid traced, caused by the displacement of the constituent matter of his plane. Imagine, for example, a cone passed apex downward through the plane. It would appear there first as a point, expanding into a circle, and this still expanding circle would suddenly disappear. These modifications of form would be caused by the involvement of the third—the vertical—dimension of the cone in the two dimensions of the plane. They would be the *time* expression of the cone's extension in the third dimension, and no other expression would be possible to the flat-man whose clock would correspond to our tape-measure. In an analogous way, the fourth dimension—as spatial extension—is apprehended by us only through its translation into *time.*—*Old Lamps for New,* Claude Bragdon.

1. Describe the phenomena that a flat-man would experience if a sphere were to pass through his film world.

2. Would the Flatlanders have any conception of the sphere as we know it?

3. Viewing human life from an analogous standpoint, what conclusion may be reached?

4. Is it rational to suppose that time is the way in which we perceive the fourth dimension?

5. What suggestion does the paragraph offer for the attainment of a four-dimensional consciousness?

6. What relation, signified in one word, does the third dimension bear to the second?

7. What phenomena may be taken as evidence of a fourth dimension?

8. Give six examples of a four-dimensional extension.

"Creative"—a word to conjure with, and what joy this twentieth century is having in its use! Every era has its keyword to the mysteries of the universe, its open sesame to the locked doors of creation. The magic word of the era just passed was "evolution." But great as were the wonders that evolution worked, "creative," the keyword of our era, promises to work still greater. We have only to pronounce it, and the inanimate springs to life; the static becomes dynamic, the mechanic, organic. Science, art, industry, respond alike to its quickening power. Through its divine force we believe ourselves able to breathe into our man-made institutions the breath of the living spirit; ay, more, to make of this universe of conflicting atoms and personalities, a unified whole with one goal and purpose.

Yet when it comes to the mind itself, surprising as it may seem, with all our creative vision, our knowledge of the creative process has scarcely passed the descriptive stage. Thus far we have been mostly concerned with noting rare and unusual achievements of favored individuals. Particularly is this true of education. Although education stresses the desirability of

creative methods and creative schools for all children, its effort is largely to discover the mentally gifted. Has the creative process then no virtue for the mind that we search thus assiduously for whatever of creative mentality may be scattered about the world?

"The creative mind is born, not made," says Professor Henry Osborn, in his *Creative Education,* and Professor Osborn is voicing the general opinion. "Genius is a divine gift," is so old an adage that the majority of persons accept it as an axiomatic truth, and because they see but rare manifestations of its presence, they naturally assume that very few individuals are thus blessed by the gods. Hence it is most encouraging when someone ventures to assert, as Mary Austin has, that "genius is the normal human possession from which the individual is dispossessed by maladventures of birth or rearing."*

A good working hypothesis, I find, is to regard genius as latent power—a power which, like all other power, has to be developed or generated from native elements. In our ignorance of the "enormous unsuspected resources of men and women" (William James), we have left the development of genius to chance, or the

**Everyman's Genius.*

enterprise of a few individuals, thus showing that in this respect also, genius is no exception to other natural forces. Once we discover the process of generating it, some degree of genius will, I believe, be attainable by all normal persons.

The practical value of this hypothesis will be evident, I am sure, to parents and teachers. It brings, as no other, the problem of self-organization home to the youth. His imagination is quickly fired by the suggestion that within his subconscious mind are forces which, if properly tapped and directed, will give him great mental wealth. He is eager to become a prospector on his own account, and our modern youth are sufficiently conversant with oil-wells to know the need of using right engineering principles in dealing with pent-up forces; for, as one little fellow said, "Gushers are dangerous."

Although the making of genius has not been the purpose of our educational experiment, we have good reason for thinking that genius may prove to be a valuable by-product of the process which we have set up for the integrating of personality. But that, of course, only time can prove. We are not predicting that our students are going to be geniuses; much less are we telling them so, for we regard superiority com-

plexes as more injurious even than inferiority ones. The latter can be overcome, but the former are apt to result in permanent arrest of development.

While difficult of definition, unexpected and spontaneous in its nature, genius is nevertheless characterized by certain definite mental qualities. All great minds have the faculty of anticipatoriness; the ability to see issues in advance, to think ahead of the mass, to predict the future trend of events. They seem to have a creative understanding of the life process; and it is the frequent manifestation of such understanding on the part of those of our students who have been with us a number of years that encourages us to believe we have surprised the secret for the making of genius. The following is an example of the sort of thing we have to rejoice us every now and then:

As an exercise in composition, I recently asked the senior class of our high school to write a short paper on "Leadership." No suggestion was given as to content; form, only, was emphasized. Of this class, eight students had been with us six or more years. These students constituted the nucleus of the most closely integrated class-group I have contacted in my many years of teaching. Though I know that

the greater the solidarity of the group, the greater the variation among its members, I was not prepared for the diversity of treatment exhibited in the papers handed me. Each presented a different point of view and a treatment all its own. But more surprising still was the insight which these young people evinced. I should explain that the old sociological concept of leadership is so opposed to our group theory that we avoid using the word. Indeed, some of our faculty members thought I was not true to form in assigning it as a topic. But, if I erred, my pupils made good my mistake, as shown by the following summary of their outstanding points:

"Before a person can be a good leader he must be a good follower. ("Good" is explained to mean faithful, responsible and constructive.) Leadership is something within a man that makes others respect him. The leader must be quick to come to the front when needed and to retire when not needed. The true leader enables each member of the group to play his part in the making of a harmonious whole. He must be able to lift his group to higher levels; must be trusted by the group, and in turn must trust the group. He must not only have courage, but must also have power to give courage

to others. He must know the purpose of his group and believe that it is very much worth while. He must be informed concerning the conditions which the group has to meet, and able to hold the group to co-operative action." Qualities demanded of the leader are: Steadiness and calmness in a crisis, tact, patience, sympathetic understanding.

Now, to compare these findings with the latest pronouncements on the subject: After a searching analysis of group-functioning, C. H. Lindeman (*Social Discovery*) defines the leader as "an individual whose rationalizations, judgments and feelings are accepted (responded to) by the group as the basis of belief and action." In *The Reign of Relativity,* Viscount Haldane, showing the need of a higher leadership, says: "The mind is self-developing, but its power of self-development comes to it through its objects and ideas. In its freedom to select these it needs guidance, intellectual, social, and spiritual." To give such guidance is the work of leaders who must "see as much as is practicable of the paths along which they are to lead." And finally, Edwin Markham, who won the recent contest conducted by the Poetry Society of Great Britain for the best poem on "The Leader," has these lines:

He will be calm and reverent and strong

. . . . . .

Will send a hope upon these weary men,
A hope to make the heart grow young again;
A cry to comrades scatter'd and afar;
Be constellated, star by circling star;

. . . . . .

Fear not; we cannot fail—
The Vision will prevail.

If these writers have succeeded in forecasting the nature of the new leadership, the reader will agree with me, I am sure, that our students show an "intimate sense of racial direction." I should add that in their work generally they have given evidence of those particular intellectual, social and activity interests which youthful geniuses have been found to possess in a degree above the average, viz.:

(1) An urge toward mental activity in the direction of generalization and the derivation of universal law;

(2) An urge to participate in activities with other human beings;

(3) An urge to do, to act, to create, to make changes in the existing order.*

**Genetic Studies of Genius,* Catherine Cox.

POST-IMPRESSIONS

If we find, on examining any picture closely, that it is all clearly to be made out, it cannot be, as painting first rate.—RUSKIN.

Post-Impressions

As some run-down old farm comes suddenly to have unexpected value because of approaching factories and warehouses, so it is with the field of education. A large increment has accrued to it in the past few years through the advance of thought in other fields of endeavor, especially in biology.

Of far-reaching import for education is the discovery that the evolution of man is about to take a new path. The human race has progressed as far as it is able to do through the individual. With all our knowledge and effort we are able to produce no finer examples of physical strength and beauty, no greater geniuses, than those of Ancient Greece.

In what, then, lies our hope for future advance? Biology answers: "In the evolution of the social unit or group."*

As life has progressed from one-celled organisms to many-celled, from small and simple forms to larger, more complex ones, so, by the

*_Direction of Human Evolution,_ Conklin.

union of many individuals into a society, a still higher unit of evolution is created, with possibilities of almost endless progress.

How is the world to come through this present turmoil and unrest into this new path of progress? Through the education of the individual to take his place in the group, which, in turn, must take its place in a larger unit, and so on, up to that great, all-inclusive unit, the human race.

The new era upon which we are entering is the era of the group. Life climbs to a higher level through association. Individualism and socialism are one for the true democracy which is the brotherhood of man. But the adult will not know how to enter into this larger selfhood unless as a child he learns that such is the way of growth and self-realization.

This end is not to be achieved, however, by throwing the child into the conglomerate of a great school. The process of socialization is from the small to the large, and through an increasing growth of consciousness. The concern of the New Education will be to keep that process from coming to a sudden termination. Directly the group in which a child is set to function exceeds his involutionary development, it becomes for him an over-mind, and his only

recourse is to assume the impersonal attitude toward all but a chosen few. For this reason our schools are divided into cliques and coteries, and are far from being the democratic institutions we think them.

The individual should rise to a higher consciousness through the group, and the group in turn should be quickened through him. That is the final test of whether the school is the right one for the child, and conversely whether the child is an accession to the school. Biologically viewed, education is the process of integration, and unless it is leading the pupil to become a creative element of an organic whole, it is failing of its true function.

Association is life-giving and life-augmenting only if voluntary and consciously creative. It is out of a growing perception of this biological truth that all mankind desires democracy. But before a true democracy can be realized, individuals must learn to enter of their own inner purpose into a conscious social relation with one another—not to the end of ensuring their individual freedom, but because of the nobler, fuller life which they may realize through the union.

What we take for the line of greatest interest is all too frequently the path of least resistance.

Spontaneous attention is of its nature involuntary, and hence does not carry far. The voluntary, willed attention fundamental to all achievement is to be attained only by a going against natural impulses, not by following them. The child who is allowed to wander about the schoolroom fancy free is the prey of circumstance, the creature of his environment. Power of sustained effort in holding to a definite line of thought requires an impelling purpose. Such a purpose carries with it interest and pleasure in the work.

Someone has said that the new democracy will guarantee to everyone an equal share in governing and obeying. The obeying should be placed first. We cannot begin too early to teach obedience. It is the child's right to know, as early as may be, that it has come into an ordered universe, and not into a chaos of chance happenings. Since the parents stand, in these first years, between it and other forces, the only laws that it can know must emanate from them. When those parental laws fluctuate, the child experiences quite the same mental confusion that we would if our physical laws were suddenly to fail us. Is it not evident, then, that if we would establish a stable mental world for our children we must require obedience from them?

Since Browning made the observation, many others have witnessed in each person three souls which make up one soul—three zones, or levels of being. The reality of the sub-rational, or subconscious zone, psychology has established beyond question, and no less a logician than Professor Keyser finds a rational basis for a super-rational zone:

> "High and vast and beyond compute,
> A realm of being absolute."

And as with masterful stroke he throws the light of the Theory of Limits upon the great human forces of idealization, the old theology becomes justified of the new infinite.* Notwithstanding, we confine our education to the rational level of being, utterly oblivious of the two infinities which impinge thereon. As a consequence the bungalow type of structure is fast replacing the stately mansion in our spiritual as in our other architecture—another sacrifice to the expediency of the day. And what poor makeshifts of personalities these bungalow-souls are! Rooms aplenty for the practical purposes of existence, but no retiring upper chamber for supping with one's Lord.

**Science and Religion*, C. J. Keyser.

Education appeals to the sub-rational mind of the child, confusing that with the super-rational. Indeed, the two are rarely distinguished, even by our best thinkers, for the reason that both have to do with the unconscious realm of being. The sub-rational is a reversion to a past order of consciousness; for the projecting of life higher we have to look to the super-rational.

The New Education will recognize the truth that the realm of externality evolves *pari passu* with the internal world of one's thought-life. "The trained thinker," said Kant, "is one in whom the space sense is well developed."

The effort of the teacher will be directed to imbuing the pupil with a creative attitude toward the world. The knowledge that she imparts will be of the great laws of life. As Madame Montessori seeks to give the little hand the muscular feel of the letters before setting it to write, so the teacher of the future will seek to give the young mind the perception of laws before requiring it to apply them. And in all her instruction, synthesis will take precedence of analysis. She will work from the whole to the part, teaching things first in their larger relations. If our present education has one

failing more than another, it is in bewildering the pupil with a multiplicity of detail. He is unable to see the forest because of the trees.

The education of the youth should enable him to enter the time-stream where he is, and not at some remote point in the past. To this end his mental development must needs repeat the history and thought of mankind, so that he will not start life with the handicap of years, perhaps centuries, to overcome. Nor should education stop with the entering of the time-stream, and yet how few adults have any thought of keeping abreast of its current! The majority of persons drift aimlessly or float into some placid cove of mental stagnation.

Because of his long struggle to attain unto a conscious selfhood, to win his individuality from the cosmos, man has come to look upon nature as a thing apart from himself—a mindless universe, he is pleased to call it. His method of approach is analytical—from the organism to the element. Looking thus from above down, from the outside in, he little guesses the creative purpose back of its unity and integrity. And when in the noontide of his pride as a

moral being he cries, "I will build an ethical system," I find myself repeating Kipling's beautiful lines:

> When I was a King and a Mason—
> A workman proven and skilled—
> I cleared me ground for a Palace such
> As a King should build,
> I decreed and dug down to my levels,
> Presently under the silt,
> I came on the wreck of a Palace
> Such as a King had built.

And we shall discover, when once we have dug down to our spiritual levels, traces of another system such as only a moral being could have built. Let us not be too quick to cry: "There was no worth in the system—there was no wit in the plan." For this is not the brute-mishandled masonry we are wont to think it. If we look closely, we shall find carven on its every stone:

> After me cometh a builder. Tell him I, too, have known.

The moral claims upon an individual may be likened to the strains and stretches upon a stitch in a knitted garment. The stitch has not only to pull evenly with its fellows in the life-row, but its integrity as a stitch depends upon its holding firmly both the stitch above and the stitch below. In truth, the whole moral order

of the web is contingent upon the purpose of the individual stitch in this regard. Let that weaken its hold ever so little, lose one strand of its many plies, and the life of the Great Society of Stitches is jeopardized. In like manner is man's rational self interwoven with the selves of all the bodily parts, and "duly tending upward, in its turn grows into, and again is grown into" by the next. As a moral being, man's first consideration is his personal integrity. He owes this to the entities whose co-ordinate use is subservient to his will. "A great integrity makes a man immortal," said Emerson. And as the stitch can neither hold firmly nor pull evenly unless it gives itself loyally to its super-entities, so with man.

As consciousness changes and develops, the sense of space changes and develops also. That is to say, the dimensionality of the world depends on the development of consciousness. And, what is of vital interest to education, *consciousness* unfolds, and as there would seem to be no limit to that unfolding, the process of growth is an infinite one. Clearly education should be a becoming, not an attaining. To seek perfection at any given stage is to arrest development. Like travelers in the night, we have

to press ever on before, and to do so we have to rely upon intuition rather than upon reason.

While we are searching in our little laboratories for some element to blow the world asunder, there awaits us in the great laboratory of nature a new element with power to bind the world together.

As yet we know very little about this element except that it is present in varying quantities when a number of persons come together with more or less unanimity of purpose. Like radioactivity, which it greatly resembles, it has always been about us, but we are only now discovering it. Mixed in the pitch-blend of human nature, it has been taken for some impurity—some trace of the herd instinct left over from our animal ancestry.

Although we have not succeeded in separating the radium-of-the-spirit from its compounds, we know that it exists as an element, different from any other element, for it has a sign manual all its own. Not only is this new element to be found in human groups, "hints and previsions" of it "are strewn confusedly everywhere about the inferior natures, and all lead up higher." Indeed, there is evidence of

it wherever living things are grouped together. We had to discover radium before we knew that all substances are possessed of radio-activity, so we had to know for ourselves the quickening power of the group-spirit before we could perceive its presence in the animal world.

Like all important discoveries, that of spiritual radium can be ascribed to no one person; Buddha, Confucius, Socrates knew of its light-emitting property, but Jesus Christ was the first to recognize its great psychological power for regeneration and creating anew. And there the discovery rests. In our day men have been mostly interested in studying the baser compounds of the group spirit, thinking that the finer are not worth the trouble.

The science of radio-activity is discovering the enormous energy locked up within the atom. It has been calculated that a gram of hydrogen has within it energy sufficient to lift a million tons through a height considerably exceeding a hundred yards. If such is the potential energy of inert matter, what may not be the potential energy of the spirit!

But it is exceedingly difficult to get a sufficient quantity for practical use. And in this aspect also spiritual radium resembles its physical counterpart. We who are working for its

increase need to possess ourselves of the infinite patience of the Curies.

Some cosmic urge, or perhaps the fiat of a creator, and organic life is seen to advance in a series of vast waves. Rising and falling in long, slow undulations, which mount higher and higher, from the amoeba to man, it comes. Then a lull. Surely it has brought life as far as it can. But wait! There seems to be a gathering of energy. Now strange new forms are appearing. Suddenly about us a seething sea of life, the psychic counterpart of the primal oceans that once encircled our globe, and again chaos reigns.

This is not an evolution that we are experiencing, but an involution, a creation. We have the high privilege to assist at the initiation of a new biologic epoch, which will last, like those others, through millions of years.

Although involution results in an aggrandizement of vital force, it by no means follows that the supra-individual life that it engenders is one to be desired. In the new science, as well as in the old cosmogony, there are devils as well as angels. Once caught up into the vortex of

a group-mind, men are as cells in the body-corporate, and wholly under the dominance of forces beyond their knowledge or control. Important, then, is it that the individual should know to what supra-consciousness he is lending himself, to make sure, before entering into its activities, that what he is creating is good. The day of involution is at hand. In the words of Professor Royce, "the detached individual is an essentially lost being." Involute we must, but let us make certain that we stay on the life-spiral.

Not only we human beings, but all living creatures, are groping their way through space to a higher consciousness. What we call dimensions are the milestones marking their progress. "Higher and lower," as we apply those terms to earth's creatures, mean simply that some have advanced further on the evolutionary road than others; the snail, being a slow traveler, is still of one-dimensional consciousness, while the dog and the horse are two-dimensional; and that we human beings think the world is limited to three dimensions is because we have progressed thus far only in our spatial unfoldment. But our path is open to higher dimensional realms if we choose. We have not

to ask for good fortune; we ourselves are good fortune. *Allons!* With an infinity of universes before us. The length and the breadth are ours, and the height and depth.

As we proceed, the strange and marvelous reveals itself to us in all phenomena. Birth, death, and life of man, his relations with other men; love and enmity, sympathies, desires, passions, become illuminated by a new light. Behind us, in the past, lies not only that which really happened, but all that could have happened. Ahead of us in the future lies not only that which is to be, but everything that might be. The past and the future are equally determined, equally exist in all their possibilities, and equally exist simultaneously with the present. Time is the element separating events in the order of their succession and binding them in different wholes.

Events which formerly appeared unrelated now constitute parts of a single whole. Each separate human life seems to be a moment of consciousness for some great being that lives through us. Philosophies and religions that proved well in a three-dimensional world fail in this four-dimensional one. And we realize that all that is highest to which we may come in the understanding of any phenomena will again

have another meaning, from another still higher standpoint, a still broader generalization. So the road stretches and waits for us. That which we have accomplished "merging always in the start of superior journeys."

The spirit of co-operation is as old as life itself. It has ever been the impelling principle back of all creating. The era that is passing has demonstrated the power coming from group-working; the era that is coming will reveal undreamed-of potentialities in group-thinking. The productive power of the individual is multiplied many fold through association, whatever form that may take. We shall not have to rely upon militarism for the preservation of our ideals, once we realize this truth.

The hope of progress lies in the united effort of humanity, which as yet is not conscious of its oneness and has not imagined what it might do once it work with one accord. "It is Ourself, not ourselves, that makes for righteousness." Upon this principle we must base our philosophy of education.

However we may differ as to that state we call immortality, we seem to agree that it is

placed in the hereafter and the beyond. It is not surprising that our outreachings toward a higher life are in the only forms of extension known to us, namely, time and space. But with the possibility that these are but limitations of our present form of consciousness comes also the greater possibility that the immortal life may begin here and now in the throwing off, to some extent, of these bonds of finitude.

Whenever two or more are gathered together in unity of mind and spirit, there is created a new level of consciousness, out of which emerge new qualities and powers. Individuals are exalted and transformed; relations and conduct are raised to a higher plane.

Therefore, let us not be troubled, saying: What shall we teach our youth? or, How shall we save them from this evil or that? but seek first to lift ourselves and them to a higher level of consciousness, and all this knowledge shall be added unto us.

Absolute standards of thought and conduct are giving way one after another to the principle of relativity; nothing exists of itself, not even time and space; there are no fixed values,

only moving systems. Education has more than to make ready for a new world; it has to prepare for a new universe.

Vitally important is it that the youth is taught, along with the laws of change, the laws of permanence; that he is brought to see, in the seeming flux and flow of things, the eternal, abiding elements. The new ethics, like the new science, demands a finer perception of relationships, a closer reasoning, a more purposive conduct. The new education should be, along with all else, a spiritual education. The International League for New Education has put itself on record to the effect that: "The essential object of all education should be to train the child to desire the supremacy of the spirit in daily life." The present chaos is the promise of a new cosmos, a cosmos whose wonders transcend our imagination. Already we are beginning to perceive that this solid world, and even life itself, is the outward show of a deeper reality; that behind our three-dimensional realm of being is a four-dimensional one, which we are as yet powerless to comprehend. But the spirit within us senses a new freedom—the freedom of a larger consciousness, and it is this freedom of the mind and the spirit that we desire for our children.

The dawn of a new educational day is at hand. Already the golden glow of it is touching schoolhouse after schoolhouse, and, like Chanticleer in Rostand's famous play, we like to believe that we have helped in bringing the light. But there is yet a sleeping world to awaken, "the night of the eyelid to overcome;" so we shall continue to sing the cause of the new education. Perchance, "on gray mornings when poor creatures waking in the twilight dare not believe in the day, the bright copper of our song may take the place of the sun."

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